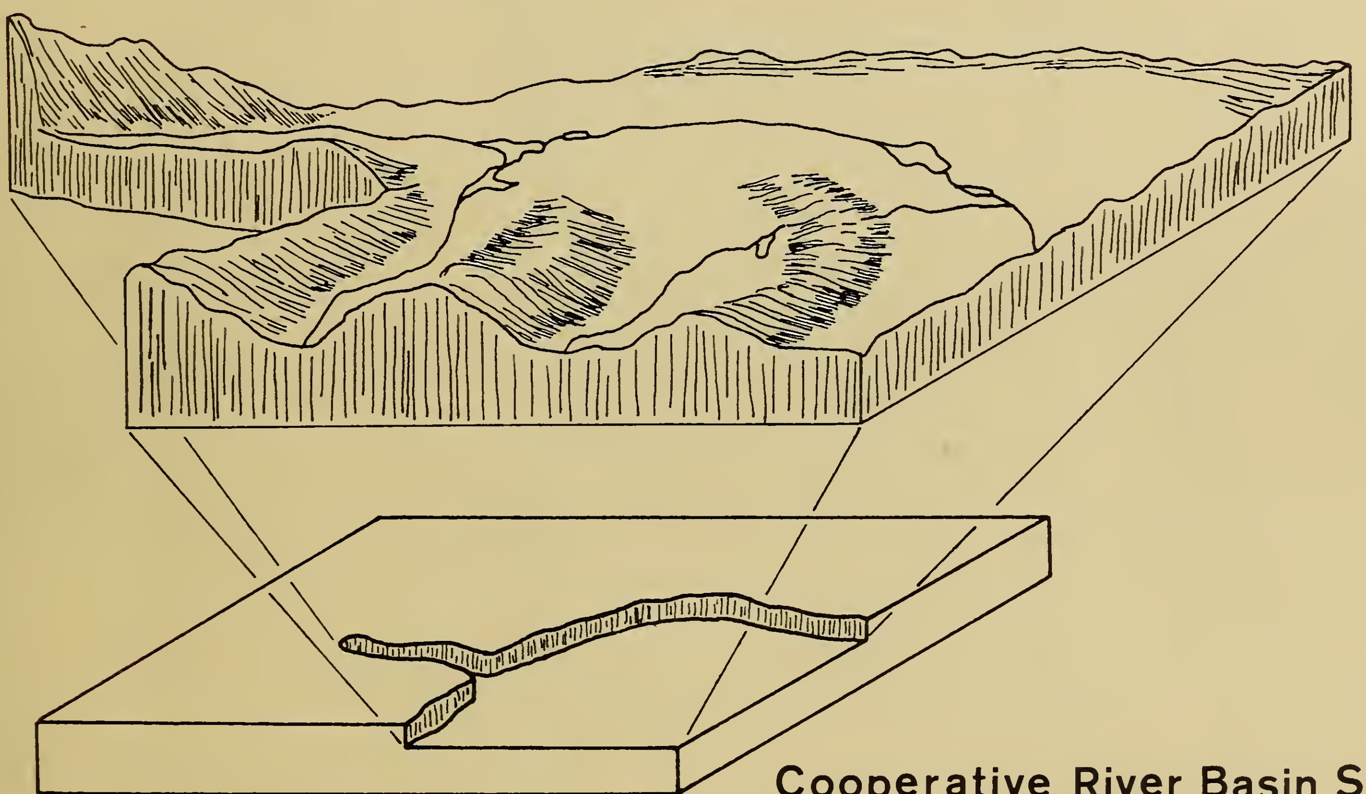
MAIN REPORT
PLATTE RIVER BASIN

WYOMING



Cooperative River Basin Study

by

UNITED STATES DEPARTMENT OF AGRICULTURE
Economics, Statistics, and Cooperatives Service
Soil Conservation Service   Forest Service

STATE OF WYOMING

March 1980

PLATTE RIVER BASIN, WYOMING

COOPERATIVE RIVER BASIN STUDY

MAIN REPORT

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Soil Conservation Service

STATE OF WYOMING

March 1980

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PREFACE

PREFACE

In 1967 the Wyoming State Legislature authorized the State Engineer to initiate a State Water Planning Program. As a continuation of the state water planning efforts, the Wyoming State Engineer's Office, acting for the state agencies with an interest in water and related land resources, requested the United States Department of Agriculture (USDA) to undertake a Cooperative River Basin Study of the Platte River Basin. The U. S. Department of Agriculture agreed to participate under the authority and provisions of Section 6 of Public Law 83-566, the Watershed Protection and Flood Prevention Act, as amended. Authorization for this study was given in September 1972.

This was a cooperative federal, state, and local study. Study participants consisted of USDA agencies - Soil Conservation Service (SCS), Forest Service (FS), and Economics, Statistics and Cooperative Service (ESCS) - and the State of Wyoming. Participation by the USDA was in accordance with a Memorandum of Understanding among the participating agencies dated February 2, 1956, and revised April 15, 1968.

Data, assistance, and cooperation in analysis of data and review of the report has been received from many individuals, local, state, and federal agencies and organizations. The following is a list of contributing agencies and organizations:

Bureau of Land Management

Conservation Districts in the Basin

Department of Economic Planning and Development

Economics, Statistics, and Cooperatives Service

Federal Timber Purchasers Association

Fish and Wildlife Service

Forest Service

Heritage Conservation and Recreation Service

Izaak Walton League

League of Women Voters

Missouri River Basin Commission

Natrona County Extension Service

North Platte Citizens Committee

Pacific Power and Light Company

Society for Range Management

Soil Conservation Service

Southeastern Wyoming RC&D Council

State Department of Health

State Historic Preservation Office

State Planning Coordinator's Office

United States Geological Survey

Water and Power Resource Service (United States Bureau of Reclamation)

Water Resource Research Institute

Wyoming Conservation Commission

Wyoming Department of Agriculture

Wyoming Department of Environmental Quality

Wyoming Farm Bureau

Wyoming Game and Fish Department

Wyoming Outdoor Coordinating Council

Wyoming Recreation Commission

Wyoming State Engineer

Wyoming State Forestry Division

Wyoming Water Development Association

Wyoming Water Development Commission

Wyoming Water Planning Program

The study was carried out under the general guidance of a USDA Field Advisory Committee, composed of a representative from the SCS, FS, and ESCS. The SCS provided leadership in carrying out the USDA responsibilities in the study. Personnel assigned to the study by the three agencies functioned as a field party under the guidance of the Field Advisory Committee (FAC). Each agency had responsibilities for certain portions of the study as outlined in a plan of work approved by FAC.

The forestry aspects of the Platte Study were de-emphasized as several national forestry issues emerged. In 1976, the Secretary of Agriculture directed the Forest Service to update the Roadless Area Review and Evaluation (RARE) and prepare a second evaluation using refined criteria (RARE II). The RARE II Final Environmental Impact Statement and the Administration's Proposal is awaiting congressional action. Since over one-fourth of the National Forest land is included in the RARE II definition, the development of Platte forestry alternatives has been suspended since 1976 pending legislative action by Congress. At the time of this Platte Report, the RARE II question is still unresolved.

Further information in regard to the Platte River Basin Report may be obtained from:

State Conservationist
Soil Conservation Service
P. O. Box 2440
Casper, Wyoming 82602

Phone: (307) 265-5550, Ext. 5201

SUMMARY

SUMMARY

The Wyoming State Engineer's Office, acting for state agencies with an interest in water and related land resources, requested the United States Department of Agriculture (USDA) to undertake a Cooperative River Basin Study of the Platte River Basin. Authorization for this study was given in September 1972. Participants consisted of USDA agencies - Soil Conservation Service (SCS), Forest Service (FS), and Economics, Statistics and Cooperatives Service (ESCS) - and the State of Wyoming.

The study addresses the concern of conserving, developing and allocating water and related land resources among alternative uses. The objectives in planning for the use of water and related land resources are to reflect society's preference for National Economic Development (NED) and Environmental Quality (EQ). The study was conducted under the multiobjective planning concept. It provides information which can be used to develop programs to meet local water needs; enhance agricultural development of the area; promote the conservation, utilization, and management of water and related land resources; and enhance environmental quality.

The main report of this study consists of three chapters and two appendices. The chapters are entitled, "Problems, Concerns, and Analysis", "Alternative Futures", and "Implementation". The appendices are: "Appendix A - A Brief Summary of the Platte River Basin Resources" and "Appendix B - Development of Alternative Futures".

Agricultural related problems and concerns were identified for the Basin and grouped into one of seven groups. These groups contain issues that tend to be interrelated, have common cause or output, or impact a common group of people.

The problems and concerns were analyzed in an alternative future framework. An alternative future is a set of assumptions about the future use of natural resources in the Basin. These are structured to show the effects of the assumption over three time intervals of 1985, 2000, and 2020. For example, an alternative future may be structured to address one of the identified problems or concerns. This alternative future is compared against a baseline future and the effects are shown in relation to the total agricultural base in the Basin. The alternative future also shows the effects on the other identified problems or concerns even though the alternative future is structured to focus on one problem or concern. (See Tables S-1 and S-2).

A selected USDA Program plan was not constructed during the course of the study at the request of the State of Wyoming. Instead, it was decided that a planning process would be developed.

As a part of this planning process several alternative futures were analyzed. An alternative future is able to show effects on the identified problems and concerns, for any assumptions used to construct the alternative future.

Information regarding implementation of specific elements are contained within the alternative futures (Table S-1). This includes USDA, State of Wyoming, and other federal agency programs that could be used in implementation. The alternative futures are summarized and show the necessary USDA man-years and program dollar commitment, 1/ state program dollar commitment 1/ and local dollar commitment 1/ needed to achieve an analyzed alternative future.

A summary of the Platte River Basin resources and the methodology, concepts, and assumptions used to define the alternative futures considered in the Platte River Basin Study is shown in the appendix. The information includes generalized maps, summary tables and a display of the alternative futures, with a minimum amount of narrative.

1/ Commitment is dependent upon the availability of the resources and upon the directives of the U.S. Congress and the State Legislature.

Table S-1 Summary of Alternative Futures--Year 2000
Platte River Basin, Wyoming

Platte Basin Concerns / Specific Study Objectives	Unit of Measure Unit 1000	Present Situation	I Resource Capability	II 75% Return: Flow Reduction	III M&I Water Competition	IV 75% Return Flow Reduction	V Import Green River Water 100% Incr.	VI Drought and Water Imports	NED	EQ
			ALTERNATIVE FUTURES 3/ (Non-Cumulative)							
Water Quality										
1. Irrigation Return Flows	AcFt	130	102	25	100	12	131	99	69	109
2. Acres with Return Flows	Acre	243	181	198	242	248	250	223	345	244
Erosion and Sedimentation										
3. Water Erosion Annl Total	Tons	5,513	5,803	5,747	5,804	7,237	5,814	5,798	7,215	4,642
4. Conservatn Land Treatmt 1/	Acre	1,199	1,142	1,081	1,140	4,529	1,207	1,118	4,880	1,137
5. Proper Land Use Change	Acre	0	375	340	376	2,620	395	366	2,719	358
Irrigation Efficiency										
6. Increasd Irrgtn Efficncy	Acre	0	90	48	88	72	94	70	145	88
Irrigation Water Development										
7. Full Wtr Supply - Irrgted	Acre	130	164	145	162	209	197	152	256	166
Flood Protection										
8. Agricultural Flooding	Acre	91	91	91	91	91	91	91	87	91
Zero Discharge										
9. Zero Discharge Systems	Acre	62	70	127	70	209	65	64	202	74
Rangeland Use										
10. Rngland w/ Added Treatmt	Acre	0	38	38	38	5,583	38	38	5,493	55
Big Game Competition										
11. Non-Critical Area BG Use	AUM	39	39	39	39	39	39	39	39	39
Winter Range Production										
12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	38	287	38	38	290	38
13. Crit Area Big Game Use	AUM	33	33	33	33	33	33	33	33	33
Fish Habitat										
14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,102	4,960	5,122	6,544	5,135	5,108	6,614	3,336
Rare, Threatened, and Endangered Species										
15. Protectd Aquatic Animal Habitat	Mile	0.352	0.318	0.327	0.316	0.248	0.315	0.317	0.245	0.486
16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	845	596	845	845	593	845
Water Recreation Use										
17. Boat, Swim, Wtr Skiing	RD	1,021	1,273	1,273	1,273	1,273	1,273	1,273	1,273	1,273
Public Access										
18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	2,127	2,127	2,127	2,127	2,127
19. Guaranteed Huntg Access	RD	280	280	280	280	280	280	280	280	280
Wilderness Areas										
20. Wilderness Classifictn	Acre	43	164	164	164	164	164	164	63	178
21. Backcountry Management	Acre	247	126	126	126	126	126	126	48	112
Flat Water Visual Quality										
22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Supply Sawmill Capacity										
23. Annual Timber Harvest	MBF	40	54	54	54	54	54	54	54	54
Timber Management Efficiency										
24. Thinning and Planting	Acre	19	81.9	81.9	81.9	81.9	81.9	81.9	121.9	17.4
USDA Commitment 2/	Man-Yrs.	--	0.806	0.839	0.826	2.891	0.882	0.777	3.050	0.828
USDA Commitment 2/	Program $	--	14,279	14,625	14,378	23,771	14,769	14,047	27,988	9,676
State Commitment 2/	Program $	--	2,505	2,611	2,560	11,562	2,737	2,417	12,158	2,474
Local Commitment 2/	Program $	--	13,747	16,519	14,423	42,802	17,058	11,994	52,793	15,059

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

2/ Commitment is dependent upon the availability of the resources and upon the directives of the U.S. Congress and the State Legislature.

3/ Descriptions of Alternative Futures can be found in Chapter 2 of this report.

Table S-2 Comparison of Alternative Futures With National Demands and Resource Constraints--Year 2000
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot Note[2/]	Baseline	I Resource Capability	II 75% Return Flow Reduction	III M&I Water Competition	IV 75% Return Flow Reduction	V Import Green River Water 100% Incr.	VI Drought and Water Imports	NED	EQ
				ALTERNATIVE FUTURES [1/]							
1. Alfalfa Hay	Tons	1	350	350	350	350	4,581	350	350	4,252	350
2. Native Hay & Pasture Equiv.	Tons	2	796	569	458	567	115	707	521	569	554
3. Barley	Bushels	3	643	643	643	643	12,690	643	643	12,613	643
4. Dry Beans	Cwt.	4	152	152	152	152	962	152	152	876	152
5. Corn	Bushels	5	3,289	3,289	3,289	3,289	309	3,289	3,289	3,318	3,289
6. Corn Silage	Tons	6	468	327	389	327	822	370	330	892	327
7. Oats	Bushels	7	1,654	1,654	1,654	1,654	16,461	1,654	1,654	14,926	1,654
8. Potatoes	Cwt.	8	657	657	657	657	6,883	657	657	7,468	657
9. Wheat & Rye	Bushels	9	5,092	5,092	5,092	5,092	5,092	5,092	5,092	7,253	5,092
10. Sugar Beets	Tons	10	590	416	432	414	941	416	429	854	438
11. Increased Irrigation Efficiency	Acres	11	90	90	48	88	72	94	70	145	88
12. North Platte Decree Irrigation	Acres	12	49	49	21	48	37	49	38	70	49
13. Irrigation Outside Decree Area	Acres	13	198	198	177	196	211	267	185	275	196
14. Revenue, Agric., Private, Net	Dollars	14	58,010	58,010	56,033	57,915	143,800	62,044	57,141	196,860	54,740
15. Production Cost, Agric., Private	Dollars	15	62,936	62,936	60,561	62,785	249,140	67,448	61,598	258,580	61,000
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	91	87	91
17. Urban Flooding	Acres	17	2	2	2	2	2	2	2	2	2
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	55.5	18	18	18	18	18
19. Irrigation Return Flows	Acre-ft.	19	102	102	25	100	12	131	99	69	109
20. Acres with Irrgtn Return Flows	Acres	20	181	181	198	244	248	250	223	345	244
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,102	5,102	4,960	5,122	6,544	5,135	5,108	6,614	2,958
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	75.8	71.6	71.6	71.6	71.8	71.6
24. Guaranteed Fishing Access	Rec-Day	24	2,127	2,127	2,127	2,127	2,127	2,127	2,127	2,127	2,127
25. Guaranteed Hunting Access	Rec-Day	25	280	280	280	280	280	280	280	280	280
26. Non-Forest Range Livestock	AUM	26	2,520	2,520	2,520	2,520	2,520	2,520	2,617	2,520	1,860
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	40	40	40
28. Feed Grain Requirements, Feed Unit	F.U.	28	285,000	285,000	285,000	285,000	1,059,300	285,000	285,000	1,180,000	285,000
29. Rangeland with Added Treatment	Acres	29	38	38	38	38	5,583	38	38	5,493	55
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	38	38	290	38	38	290	38
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	33	33	33
32. Critical Areas - Livestock Use	AUM	32	76	78	75	76	95	77	75	95	42
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	0	39	0	39	39	39	39
34. Non-Crit. Area - Livestock Use	AUM	34	2,442	2,442	2,445	2,444	2,425	2,443	2,445	2,425	1,819
35. Critical Big Game Area	Acres	35	552	552	552	552	300	552	552	300	552
36. Protectd Aquatic Animal Species	Miles	36	318	318	327	316	248	315	317	245	549
37. Protectd Terrestrial Animal Species	Acres	37	845	845	845	845	593	845	845	593	845
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	76	72	72	72	72	72
39. Flat Water Fishing	Rec-Day	39	1,440	1,541	1,541	1,541	1,541	1,541	1,541	1,541	1,541
40. River & Stream Fishing	Rec-Day	40	829	586	586	586	586	586	586	586	586
41. Big Game Hunting	Rec-Day	41	315	195	195	195	195	195	195	195	195
42. Small Game & Bird Hunting	Rec-Day	42	206	84	84	84	84	84	84	84	84
43. Boating, Swimming, & Water Skiing	Rec-Day	43	1,021	1,273	1,273	1,273	1,273	1,273	1,273	1,273	1,273
44. Designated Wilderness	Acres	44	43	164	164	164	164	164	164	63	178
45. Managed Backcountry	Acres	45	247	126	126	126	126	126	126	48	112
46. Wilderness Experience	Rec-Day	46	74	31	31	31	31	31	31	7.4	31
47. Backcountry Experience	Rec-Day	47	50	20	20	20	20	20	20	4.4	20
48. Total Timber Harvest, All Owners	Board-ft.	48	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000
49. National Forest Timber Harvest	Board-ft.	49	44,280	44,280	44,280	44,280	44,280	44,280	44,280	44,280	44,280
50. National Forest Net Present Worth	Dollars	50	--	-6,658	-6,658	-6,658	-6,658	-6,658	-6,658	-20,312	-8,378
51. State & Private Timber Harvest	Board-ft.	51	7,560	7,560	7,560	7,560	7,560	7,560	7,560	7,560	7,560
52. State & Private Net Present Worth	Dollars	52	--	1,993	1,993	1,993	1,993	1,993	1,993	2,085	2,085
53. Lumber Produced, Lumber Scale	Board-ft.	53	74,100	94,500	94,500	94,500	94,500	94,500	94,500	94,500	94,500

1/ Descriptions of Alternative Futures can be found in Chapter 2 of this report.

2/ Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

INTRODUCTION

INTRODUCTION

The Platte River Cooperative River Basin Study addresses the concern of conserving, developing and allocating water and related land resources among alternative uses. The objectives in planning for the use of water and related land resources are to reflect society's preference for National Economic Development (NED) and Environmental Quality (EQ). The study was conducted under the multiobjective planning concept. It provides information which can be used to develop programs to meet local water needs; enhance agricultural development of the area; promote the conservation, utilization, and management of water and related land resources; and enhance environmental quality. A list of agricultural related problems and concerns in the Basin was developed through public involvement and through input of state and federal agencies. As a framework to analyze the problem and concerns, eight alternative futures were structured.

To meet the multiobjective planning concept the study developed a computer oriented process that includes site specific inventories, agricultural and forestry resource allocation models, and analysis of economic, employment, and population impacts. The objective behind this systems approach is to rapidly develop quantitative information for new alternatives. In the development of the systems approach procedures, the following general principles were followed:

1. An inventory system that allows for storage and retrieval of land resource information according to the needs expressed by USDA agencies, the State of Wyoming and other groups.

2. An incremental analysis system designed on the precept that as the state interacts with other planning groups, proposed developments can be evaluated cheaply and easily as far as the impacts on agriculture and forestry are concerned. The displays of the major components of economics, production, social effects, and environmental effects within a tradeoff analysis framework be useful to decision-making in the political process.

3. Analysis and data have additional uses beyond the USDA Cooperative River Basin Study context. This requires that the tools, inventories, and procedures remain accessible to interested people.

4. To aid in the interpretation and to develop credibility for the results, the procedures used in the study should be written down and made available as technical working papers.

During the course of the study seven technical working papers and two procedural manuals were developed. These publications give interested individuals more detail, technical data, and methodology than is in this main report. They also provide backup data for the main report. Working papers broaden the scope of the study and provide information that could help in implementation of specific activities in the Basin.

The seven working papers and two procedural manuals are as follows:

Summary of Information and Working Papers - This working paper includes brief summaries, in addition to tables of contents from each working paper and the main report.

Concepts Used in the Planning Process - The purpose of this working paper is to document the concepts and computer oriented tools developed for the Platte study. The concepts include an agricultural resource allocation model; forestry resource allocation model; economic, employment, and population impact model; loss of future options analysis; and a social conflict analysis.

This planning process is centered around the concept of Alternative Futures and the development of pertinent information that helps explain the tradeoffs, impacts, and resource commitments. There are an infinite number of choices about these futures, the problem is to develop information that can be used to improve the quality of the decisions being made.

Basic Land Relationships - This working paper describes the procedures and formulas or equations used to estimate resource use and effects. It also contains the coding used in both the agricultural and forestry resource allocation models so that the computer printouts can be translated.

Land Inventory - Basic to any planning effort are resource inventories. This working paper describes the code and procedures used to develop the computer oriented land resource inventories used in the Platte study.

The land resource inventories were gathered in a manner such that the data could be easily stored on computer tapes. The data is stored at the USDA Computer Center in Fort Collins, Colorado. As requested by the Wyoming Department of Agriculture, each county within the boundary of the Basin has its own land resource inventory tape.

Contained within this working paper are sections dealing with land inventory procedures, land inventory codes, watershed groups, land area balance, crop and cropland distributions, and critical winter wildlife areas, and special management areas.

Economic Base Report - This working paper details the economic base of the Basin. The base was developed around two main objectives or points of emphasis and a specific purpose.

The first objective was to determine the existing economic base of the Basin. Under this objective it was determined which industries are basic (export or primary) and which are nonbasic (service, local, or residential). A basic industry is one which exports from the region some or all of the goods or services it produces within the region.

Nonbasic industries are industries of the region which produce goods and services to be sold and consumed within the region. Nonbasic industries' existence and growth depends heavily on the existence and growth of the basic industries.

The second objective of the working paper was to project the economic base for the Basin for selected years through the year 2020. In this study there is heavy reliance on the projections prepared by the Bureau of Economic Analysis of the U. S. Department of Commerce and Economics, Statistics, and Cooperatives Service of the U. S. Department of Agriculture (OBERS).

Recreation - The purpose of this working paper was to develop a perspective with regard to future outdoor recreation area and facility requirements for Wyoming's Platte River Basin. The analyses of area and facility requirements covers three population growth scenarios: (1) OBERS Series C, (2) OBERS Series E, and (3) a Wyoming Water Planning Program projection that includes energy development impacts. Discussions relating to existing recreation areas and facilities and to projections of participation in outdoor recreation activities is broader than the discussion of area and facility needs. The discussions of the existing base and of future participation was kept as broad as possible as a means of maintaining breadth in the perspective. The needs discussion, on the other hand, was limited to those recreation activities that relate or could be affected by programs of the U. S. Department of Agriculture.

Watershed Investigation Reports - This working paper combines in one volume all of the watershed investigation reports developed during the course of the study. The purpose of a watershed investigation report is to determine feasibility of possible project action that could be taken to solve identified problems and concerns within the watershed. The reports are agricultural related and key on existing USDA programs.

Within the Basin there are 134 individual watersheds that were delineated for the study. Each watershed was reviewed to identify specific problems or concerns. Following this review 36 watersheds were tagged for more detailed study. This working paper shows the results of the more detailed study of the 36 watersheds.

Basic Land Information, Storage and Retrieval System - The Basic Land Information, Storage and Retrieval System (BLISTORS) report is a procedural manual that details explicitly the process of retrieving inventory data from computer storage at the USDA Fort Collins Computer Center. The manual is written to be used in conjunction with the Land Inventory Working Paper and can be used at the county level.

Contained in the manual are chapters on orientation on BLISTORS, data extraction and reports, and an advanced description of the computer package.

Alternative Future Commitment Procedures - The purpose of this procedural manual is to show the calculations used to estimate the necessary manpower and dollars required to implement each of the alternative futures analyzed in the study. The estimates define USDA programs in terms of man-years of technical assistance and program dollars; the State program in terms of program dollars; and the local landowners share in dollars. The man-years and dollars are further separated into economic and environmental elements.

Within the framework of the analytical tools developed for the study, several alternative futures were analyzed. Each alternative future shows the impacts the individual alternative future has upon a set of identified Basin concerns.

METHOD OF ANALYSIS

The analysis of alternative futures involves the systematic projection of data into the future and analysis of existing data. The analysis stems mainly from two resource allocation models: forestry and agriculture. The forestry model was used to quantify the outputs and impacts of multiple use management on National Forest, Bureau of Land Management, state, and private forest land. The interactions used to assess forestry related tradeoffs include water yield and quality, forage production, production economics, timber management, payment in lieu of taxes, erosion and sediment, outdoor recreation including wilderness and backcountry experience, petroleum fuel use, and environmental quality indexes for air, water, development and use, and wildlife.

The agricultural resource allocation model was used to maximize net revenue subject to land and water resource capability and availability. The interactions used to assess agriculture related tradeoffs include the production costs and net returns; crop and range production; feed grains; pasture; soil loss; labor; antelope, deer, elk, and sage grouse habitat; irrigation water use; ground and surface water irrigation supply; irrigation systems and return flow; land conversions; conservation treatment; and tillage systems.

The amounts of production of goods, services, and restraints of activities inherent in the selected alternative future was used to control the two allocation models such that tradeoffs in economics and impacts could be calculated. The agriculture model was used to develop information for the six alternative futures as well as the NED and EQ futures. Because of the moratorium on forestry development activities in the RARE II areas, realistic Platte forestry alternatives cannot be constructed until the wilderness question is resolved by Congress. With this in mind, the forestry situation was simplified into three alternatives: NED, EQ, and a compromise generated at public meetings. The impacts for the compromise is displayed in all of the agriculture alternative futures.

The impacts for each of the alternative futures are displayed in six tables. These tables are :

Synopsis and Commitment For Alternative Future

Effects of Alernative Future

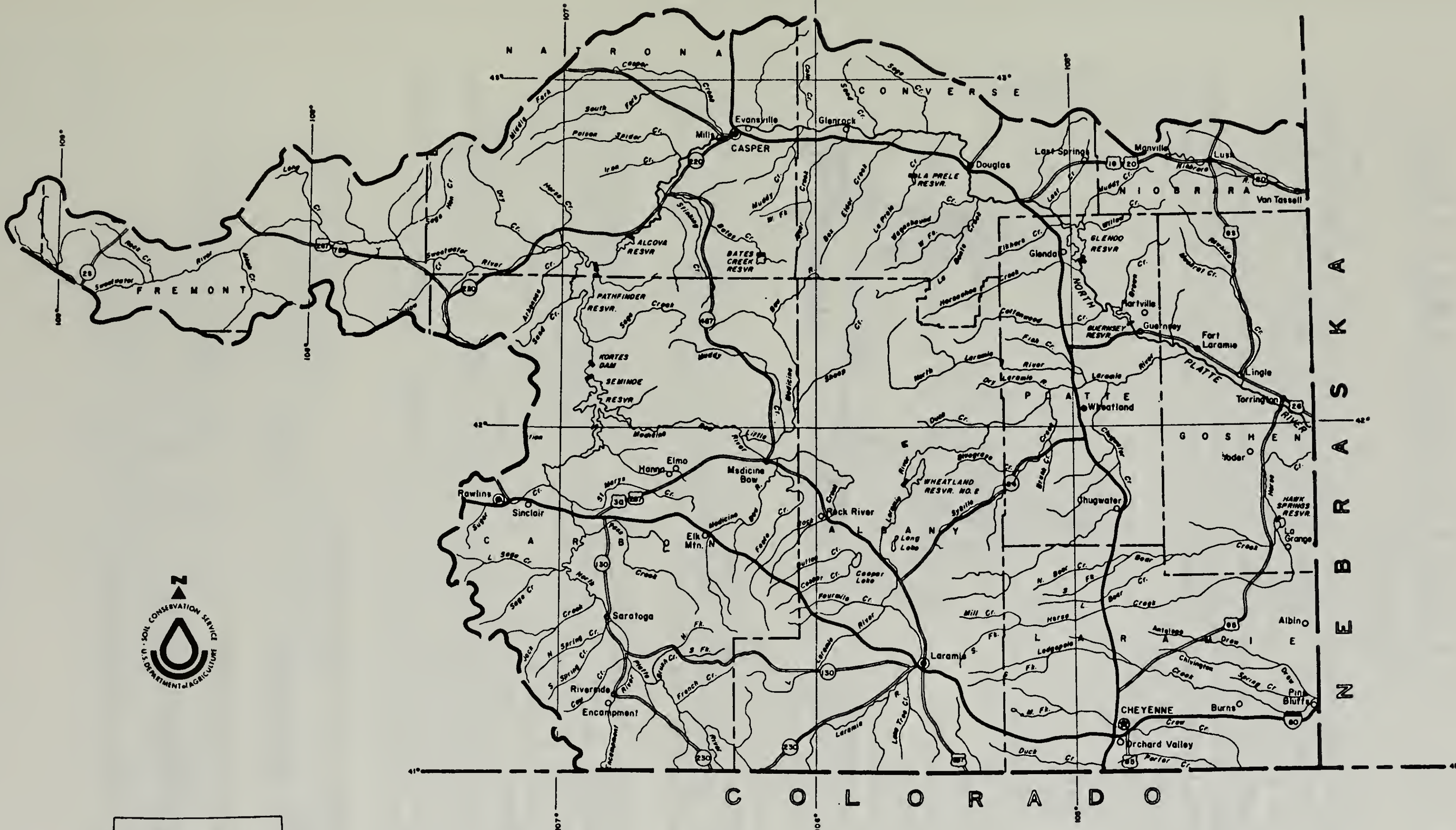
National Economic Development Account

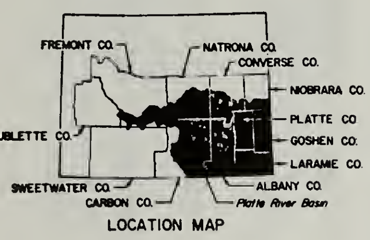
Environmental Quality Account

Regional Development Account

Social Well-Being Account

No selected USDA program plan was developed for the Platte River Basin in Wyoming. The intent of this report is to display the effects the alternatives have upon the identified problems and concerns.





PLATTE RIVER BASIN

WYOMING

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

FEBRUARY 1974

10 0 10 20 30 40 MILES

SCALE 1:1,500,000

ALBERS EQUAL AREA PROJECTION

Figure 1-1

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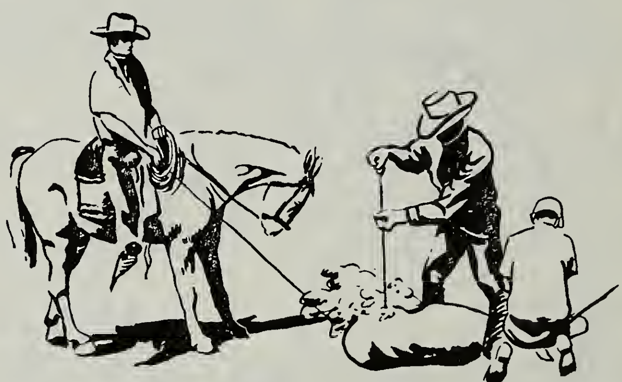
CHAPTER 1

P R O B L E M S, C O N C E R N S A N D A N A L Y S I S

INTRODUCTION

The Platte River Basin for this study consists of the drainage areas in Wyoming of the North Platte, South Platte and Niobrara Rivers. It is the same area that was studied for the Platte-Niobrara Subbasin of the Missouri River Basin Comprehensive Study. The study area occupies approximately 24,664 square miles in central and southeastern Wyoming. This area, hereafter frequently referred to as the Basin, extends northward some 150 miles from the Wyoming-Colorado State line and westward from the Wyoming-Nebraska State line about 260 miles. Of the total area, 22,074 square miles are in the North Platte River drainage, 2,053 square miles in the South Platte River drainage, and 537 square miles in the area drained by the Niobrara River. All of Laramie, Goshen, Platte, and Albany counties, most of Carbon county, substantial parts of Natrona, Fremont, Converse, and Niobrara counties and small parts of Sweetwater and Sublette counties are in the study area.



The Basin contains nearly 51 percent of the entire population of the State of Wyoming. People in Wyoming as well as outside the State were asked to identify problems and concerns. The results indicate a wide range of concerns regarding the resources of the Basin. Public concerns touched mainly upon resource development, but also included politics, financing, governmental coordination, and, land use planning.

Concerns raised during the public involvement process were grouped into one of seven groups:

Group 1 Water, Air, Land Quality

Group 2 Water Management

Group 3 Range Management

Group 4 Wildlife Management

Group 5 Recreation Management

Group 6   Timber Management

Group 7   Land Use Planning Process

The groups are issues that tend to be interrelated, have a common cause or output, impact a common group of people, or where the solution to one problem might have adverse effects on another.

The problems and concerns are analyzed using alternative futures. An alternative future is a set of assumptions about the use of natural resources in the Basin. These are structured to show the effects of the assumption over three time periods - 1985, 2000, and 2020. For example, an alternative future may be structured to solve one of the identified problems or concerns. This alternative future is compared against a baseline future and the effects are shown either less than or greater than the baseline. The alternative future also shows the effects on the other identified problems or concerns even though the alternative future is structured to focus on one problem or concern.

A brief description of the alternative futures are as follows:

Alternative Future I. This alternative is used as a standard of comparison with the other alternative futures. Crop production is to not exceed OBERS E Prime levels for the Basin.

Alternative Future II. This alternative analyzes the effect of reducing irrigation return flows. Crop production is to not exceed OBERS E Prime levels for the Basin.

Alternative Future III. This alternative analyzes the effect of changing water use from agriculture to some other use. Crop production is to not exceed OBERS E Prime levels for the Basin.

Alternative Future IV. This alternative analyzes the effect of reducing irrigation return flows as does Alternative Future II. However, crop production is not constrained to OBERS E Prime levels for the Basin.

Alternative Future V. This alternative analyzes the effect of importing water into the Basin. Crop production is to not exceed OBERS E Prime levels for the Basin.

Alternative Future VI. This alternative analyzes the effects of importing water into the Basin, changing water from agriculture use to some other use, and a reduced water supply caused by drought conditions. Crop production is to not exceed OBERS E Prime levels for the Basin.

NED Alternative Future. This alternative maximizes the economic return to the Basin. Crop production is not constrained to OBERS E Prime levels for the Basin.

EQ Alternative Future. This alternative maximizes the environmental quality in the Basin. Crop production is to not exceed OBERS E Prime levels for the Basin.

All of the alternative futures used in the analysis of the problems and concerns are described in Chapter 2 of this report.

All of the forestry alternatives meet the Basin's share of national timber demand through the period of projection, the year 2020. The difference is in how the production is achieved and the level of timber production in the decades following 2020. The NED assumes the development of areas not classified as wilderness and maximum timber production because of its effect on employment and income. The EQ assumes a large proportion of roadless areas being classified as wilderness and resource management geared to enhance environmental quality. The public compromise alternative includes the EQ alternative for wilderness and developing the production base for timber products.

WATER, AIR, LAND QUALITY GROUP

Problems and Concerns

Water Quality

Irrigation surface return flows may not always meet water quality standards. Alternatives raised for meeting the standards include the concept of zero discharge of return flow water. Water pollution control aspects of limiting irrigation surface return flows to zero may have detrimental effects on downstream agricultural water use and water rights. It should be noted that the concerns of enforcement of zero discharge for irrigation return flows under the National Pollution Discharge Elimination System (NPDES) has been eliminated. The Clean Water Act of 1977 (P.L.-95-217) removed irrigation return flows from the NPDES (Section 402) and placed them under local control of Areawide Waste Treatment Management (Section 208). The Inter-Departmental Water Conference of the State of Wyoming and representatives of industry identified this concern.

Erosion and Sediment

Erosion and sediment build up from land activities such as strip mining, agricultural practices, logging, and construction activities degrade the land base, pollute the air with dust, and deteriorate water quality. This concern was identified by several Conservation Districts in the Basin, by the North Platte Citizens Committee and by representatives of industry. Also the watershed screening process used by the Soil Conservation Service in this study identified some areas of erosion and sedimentation.

Location of the Problems and Concerns

Essentially, water, air, and land quality problems are related to areas of the most intensive land use such as some areas of irrigated and dry cropland, intensive forestry, and the existing road system in the Basin.

Silt as a water quality problem can, in most cases, be related to areas of deteriorated rangeland, irrigated cropland, urban areas, and streambank erosion.

Saratoga Valley

In the Saratoga Valley area the most common source of erosion and sedimentation is derived from streambanks. The following watersheds (see Watersheds Group (WG) Map, Figure 1-2) have active streambank erosion: Encampment (WG-2), Wood Mountain (WG-2), Brush Creek (WG-5), Cow and Calf (WG-3), Spring Creek Lake (WG-3), and Sage Creek Basin (WG-7). Sage Creek Basin also has severe sheet erosion over a large part of the watershed.

Wood Mountain Watershed has minor wind erosion occuring on the nonirrigated cropland within the watershed.

Nearly 72 percent of the irrigated land in the valley is Irrigated Type III which is defined as land having water usually applied in excessive amounts over long periods of time. This is the "mountain meadow" type of irrigation. Not all of the acres of Type III irrigation contribute to the Water, Air, Land Quality Concerns, but some do.

Approximately 27 percent of the rangeland in this area is in poor or fair condition with reduced plant cover and contributes to the problem of water quality.

Sweetwater

The Sweetwater arm of the Basin has only minor areas of erosion and sedimentation.

The Sweetwater (WG-12) and Crooks Creek (WG-13) Watersheds have some erosion and sedimentation problems related to mining.

About 92 percent of the irrigated land is Type III irrigation. This type of irrigation occurs on about 6,000 acres of land. Again, not all of the acres of Type III irrigation contribute to the Water, Air, Land Quality Concerns.

Nearly 30 percent (300,000 acres) of the rangeland in this part of the Basin is in poor or fair range condition with reduced plant cover and contribute to the problem of water quality.

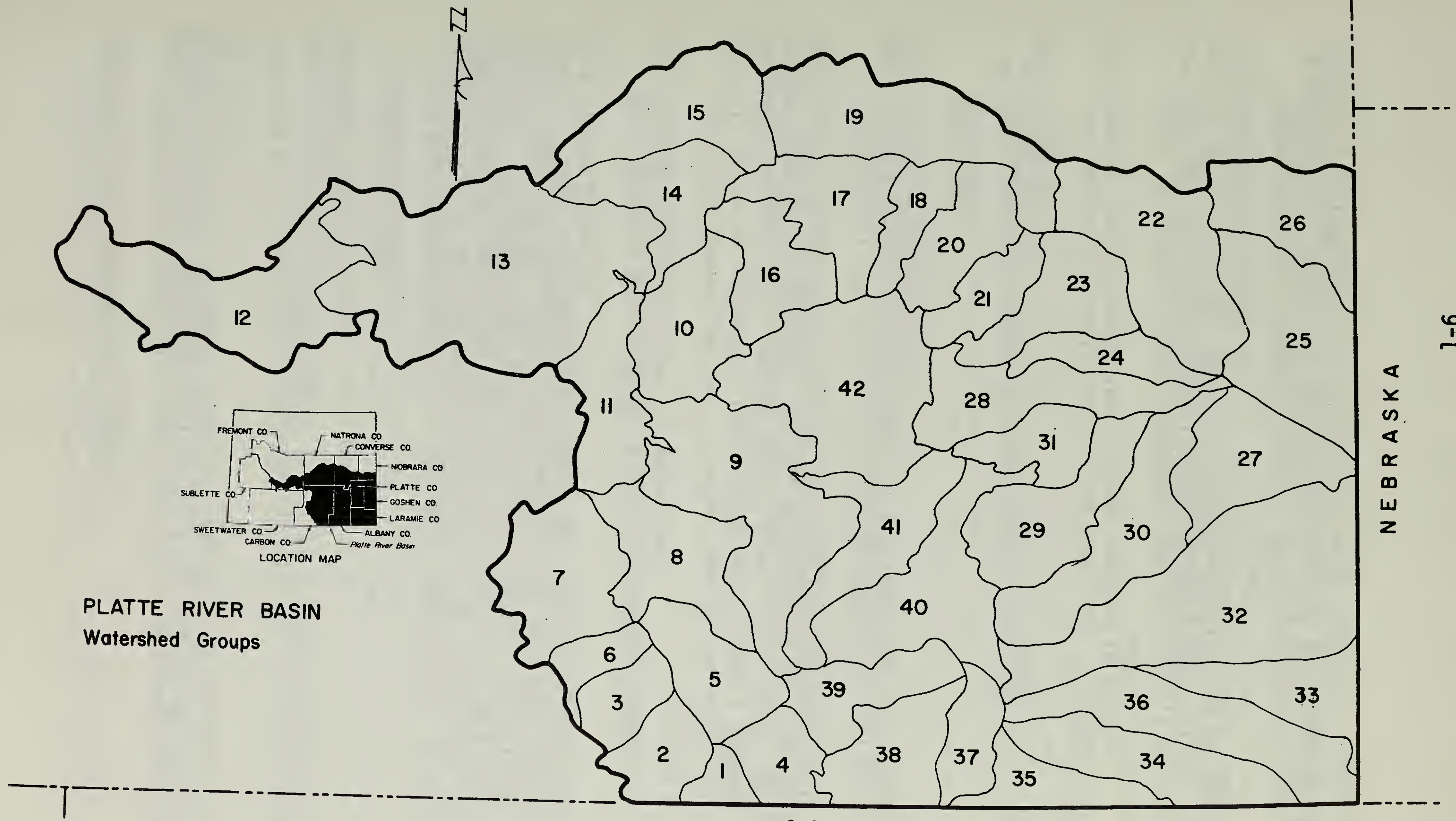


FIGURE 1-2

PLATTE RIVER BASIN
Watershed Groups

Pathfinder-Guernsey

In the Pathfinder Reservoir to Guernsey Reservoir area the most common source of erosion and sedimentation is derived from streambanks. Bolton Creek (WG-10), Bates Hole (WG-16), Bates Creek (WG-16), Reno Hill (WG-17), Boxelder Creek (WG-18), and Horseshoe Creek (WG-23) Watersheds have identified streambank erosion problems.

About 32 percent (1,250,000 acres) of this area has rangeland in poor or fair condition with reduced plant cover and contribute to the problem of water quality.

Only about 6 percent (5,080 acres) of the irrigated land is Type III. Not all the acres of Type III irrigation contribute to the concerns.

Areas that are opened for urban development, such as large housing developments in and around the City of Casper (WG-17), are subject to wind erosion. This of course, reduces the air quality in that particular part of the Basin. Wind erosion is also a problem in the area of Glendo Reservoir (WG-23) during the fall and winter months when water levels are low and large expanses of non-vegetated land is exposed.

Laramie Plains-Medicine Bow

Streambank erosion in the Laramie Plains and Medicine Bow area contributes to the concerns of the Water, Air, Land Quality group. Difficulty (WG-9), Allen Lakes (WG-9) and Little Medicine Bow River (WG-42) Watersheds all experience streambank erosion.

Only about 20 percent (450,000 acres) of rangeland is in poor or fair condition with reduced plant cover and contribute to the water quality concerns.

About 74 percent (103,000 acres) of irrigated land is Irrigation Type III. Of course, not all the Type III irrigation land contributes to the concerns.

Wind erosion is occurring on land that is being strip mined for both coal and uranium. These areas are relatively small in the Ditch (WG-9) and Shirley (WG-42) Watersheds.

Eastern Basin

The eastern part of the Basin has the most intensive irrigated and dryland farming. There are 291,300 acres of irrigated cropland and 620,700 acres of dry cropland in Platte, Goshen and Laramie Counties. Dry cropland is subject to some wind erosion in these three counties. Intensive irrigated cropland, particularly some of the row crop areas are subject to water erosion.

About 23 percent (826,900 acres) of the rangeland in these three counties is in poor or fair condition with reduced plant cover and contribute to the water quality concerns.

Large tracts of land cleared for urban development such as in Cheyenne (WG-34), Wheatland (WG-29), and Torrington (WG-25) are a source of air quality concern.

Basic Cause and Trends of the Concerns

Land use activities to produce goods and services have many effects, some of which are good and some of which are bad for natural resource stability. Water and wind erosion are reducing the overall productivity and environmental quality in the Basin. Legislation has been enacted by both the State and Federal governments that emphasizes environmental quality improvement.

Complexity and Seriousness of the Concerns

Since the passage of the National Environmental Policy Act in 1969, more emphasis has been placed on the quality of land, air, and water in water and related land resource planning. The major thrust of the Platte study has been in modeling multi-resource use interactions and tradeoffs, such that environmental concerns are roughly quantified.

Analysis of Water, Air, Land Quality Concerns

The individual concerns of Water Quality, and Erosion and Sediment have Environmental Quality as their primary objectives (Table 1-1). These were grouped because of their anticipated interactions during analysis.

The desired results in solving these concerns are varied, but are centered around maintaining or improving land, water, and air quality.

Ways to achieve the desired results include upgrading practices in irrigation water management; road construction and maintenance; timber harvest; subdivision developments; farm and ranch management; and city operations.

Table 1-1

WATER, AIR, LAND CONCERNS
Platte River Basin, Wyoming

Primary Objective	Concern	Components of Objective		
		1st Level Desired Results	2nd Level Actions that can be taken	3rd Level Programs that could be used
EQ	WATER QUALITY. (Units of measure are Irrigation Return Flows and Acres with Return Flows. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Maintain or improve the quality of water from irrigation return flows.	Improve irrigation water management through structural and non-structural actions.	Conservation operations, PL-566, Great Plains Conservation Program, Resource Conservation and Development project measures, Federal land management programs, state programs.
EQ	EROSION AND SEDIMENT. (Units of measure are Water Erosion-Annual Total, Conservation Land Treatment, and Proper Land Use Change. See Table 1-30 and Synopsis and Commitments Tables in Appendix B.	Maintain or improve land, air, and water quality.	Control erosion and sedimentation by revegetation, runoff control and cultural practices.	Conservation operations, PL-566, Great Plains Conservation Program, Resource Conservation and Development project measures, Federal land management programs, state programs.

Both public and private financing would be needed to accomplish the desired results. USDA presently has programs to assist landowners in solving erosion problems. Some of these programs are cost-shared.

Water Quality

Irrigation return flows frequently contain pollutants that are detrimental to water quality. Therefore, this particular concern was analyzed in the context of managing irrigation return flows.

The effect of reducing or eliminating irrigation return flows varies according to the production level. With no constraint on the production of crops in the Basin and managing irrigation systems so that there are no irrigation return flows shows that there is almost no effect on economic or production parameters for the total Basin. This is shown in Alternative Future IV. However, with a production constraint on each crop, the effect on several parameters is significant. Total net revenue, production cost, and man-hours of labor decline about 10 percent as return flows from irrigation approach zero. In both the constrained and unconstrained production levels, big game habitat and soil erosion levels are not affected.

Detailed Analysis

The following assumptions are made with respect to the concern analysis. In reducing irrigation return flows, sprinkler systems are applicable on all irrigated lands, and reflect the investment (capital and labor) a landowner would need to make to achieve no return flows of irrigation water. This assumption significantly affects the analysis since there may be more economical alternatives for reducing irrigation return flows. Surface distribution systems are assumed to have return flows. The effect on stream flows, ground water recharge, downstream irrigators, and required off-farm distribution systems are not considered.

Alternative Futures II and IV were structured to examine return flows and are used to analyze this concern. Four levels of irrigation return flow management were assumed for each of three time periods. The four levels key on the total quantity of irrigation return flow (acre-inches) allowed: (1) no constraint to the amount of irrigation return flows; (2) reducing the amount of return flows by 50 percent; (3) reducing the amount of return flows by 75 percent and (4) eliminating the return flows entirely.

The no constraint level is the quantity of irrigation return flow in Alternative Future I which is used as the standard of comparison. Reduced return flows are then increments of Alternative Future I and make up Alternative Future II. The same analysis was made for Alternative Future IV, which is the nonconstrained crop production alternative.

Crop prices used in Alternative Future II and Alternative Future IV are not identical. In Alternative Future II, Water Resource Council Prices are used while in Alternative Future IV, the State of Wyoming prices averaged for the years 1972-1976 are used. Consequently, differences in results between the two alternatives may be due to either price changes or production constraint changes.

The effects of the Alternative Futures on selected parameters are shown graphically on Figures 1-3 through 1-10. These graphs are designed to show magnitude and direction of change rather than absolute values. The Baseline Future is defined to be equal to 1.0. The index then indicates the variance of Alternative Futures II and IV from the Baseline Future.

The reduction of irrigation return flows has a greater impact in Alternative Future II than in Alternative Future IV. Many of the parameters in Alternative Future II are reduced about 10 percent when return flows are eliminated, but in Alternative Future IV most of the parameters have a change of less than one percent. Even in Alternative Future II, little change occurs until irrigation return flow is reduced more than 50 percent.

Alternative Future IV shows smaller changes since the acreage of dry cropland is six times greater (3,100,000 acres versus 494,600 acres) than Alternative Future II. Thus, a larger share of total net revenue (and most of the other parameters shown in the graphs) is derived from the dryland crop production which is not affected directly by irrigation return flow constraints.

The absence of a production constraint in Alternative Future IV allows greater substitution of crops. Consequently, net revenue can remain nearly constant.

The total acreage of irrigated land which is economically feasible to irrigate declines as irrigation return flows are reduced. Alternative Future II has a greater decline than Alternative Future IV. Table 1-2 shows the reduction in irrigated land as return flows are reduced.

In Alternative Future II, net revenue declines about 10 percent as return flows approach zero.

The above discussion relates only to Basinwide effects. Within certain areas or watershed groups, the effects may be greater while some watershed groups may not be affected at all.

Table 1-2 Irrigated Acres At Four Return Flow Levels
Platte River Basin, Wyoming

Return Flows	Alternative Future II 1985	2000	2020	Alternative Future IV 1985	2000	2020
	(1,000) (Acres)	(1,000) (Acres)	(1,000) (Acres)	(1,000) (Acres)	(1,000) (Acres)	(1,000) (Acres)
No Reduction	253	247	227	260	251	251
50% Reduction	245	232	229	248	255	256
75% Reduction	212	198	200	241	248	248
100% Reduction	138	142	153	214	222	224

NED-EQ Ramifications

NED ramifications of reducing irrigation return flows are much greater than the EQ ramifications. The total net revenue of the Basin decreases more than 10 percent as return flows approach zero in Alternative Future II. However, in Alternative Future IV, net revenue decreases less than 0.7 percent. The change in labor man-hours is almost identical to the changes in net revenue.

The EQ ramifications, as reflected in wildlife habitat indices and the amount of soil erosion at rates of greater than 0.5 ton per acre per year, are not significant. Wetland habitat, instream flow, etc., were not considered directly. Any reduction in irrigation return flows would lessen the chance of pollutants being carried to the water course.

Project or Program Possibility

There may be justification for compensation payments to cover lost income to the Basin. These payments would be greater in some areas of the Basin than in others. Improved irrigation management practices using surface distribution systems such as recovery ponds, trickle irrigation, etc., rather than sprinkler systems may be a more practical method of reducing irrigation return flows.

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN WATER QUALITY (MEASURED BY IRRIGATION RETURN FLOW REDUCTION) AND SELECTED ITEMS, YEARS 1985, 2000, AND 2020. THIS SAME RELATIONSHIP IN THE BASELINE ALTERNATIVE IS THE BASES FOR COMPARISON.

WATER QUALITY

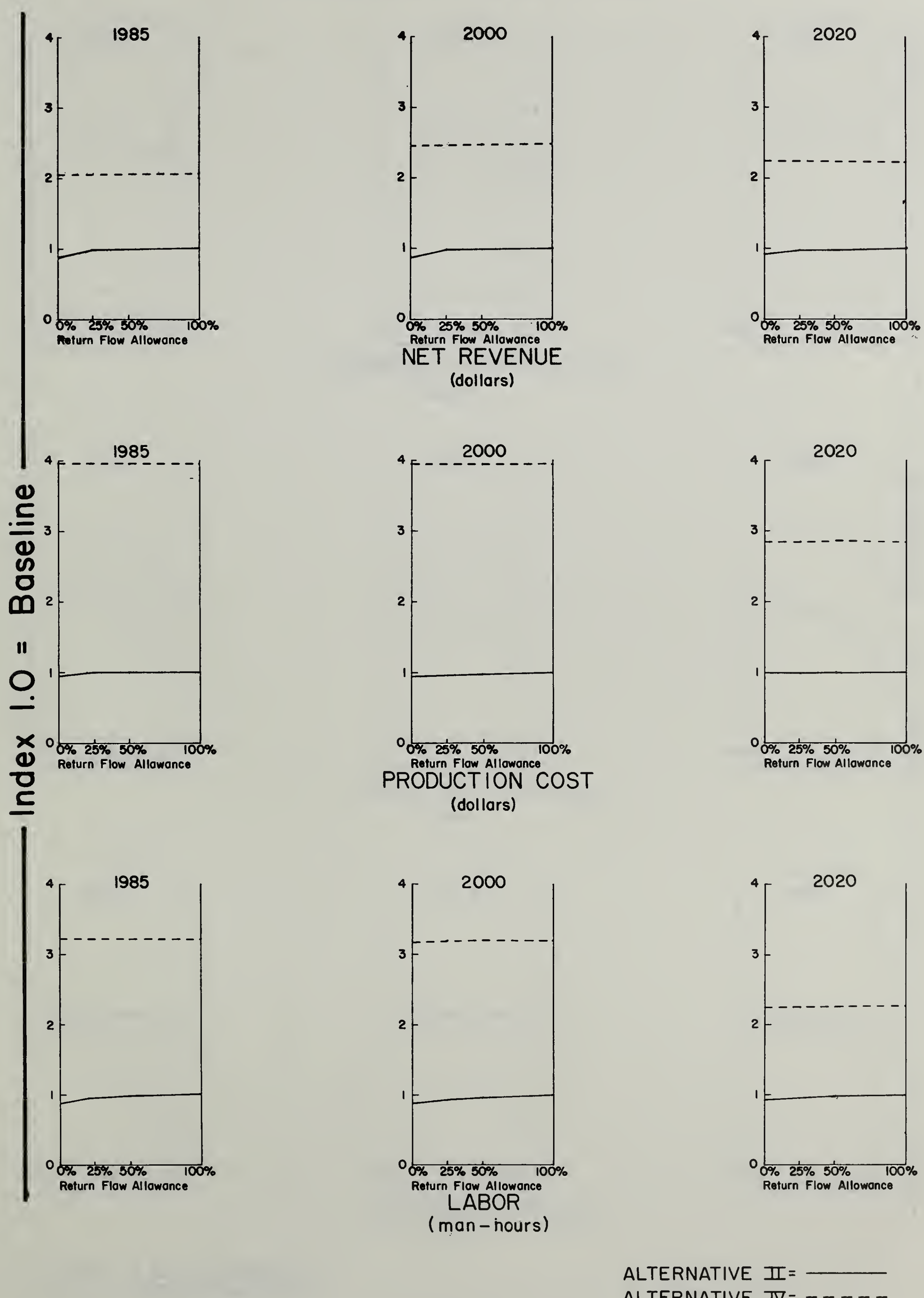


FIGURE 1-3

WATER QUALITY

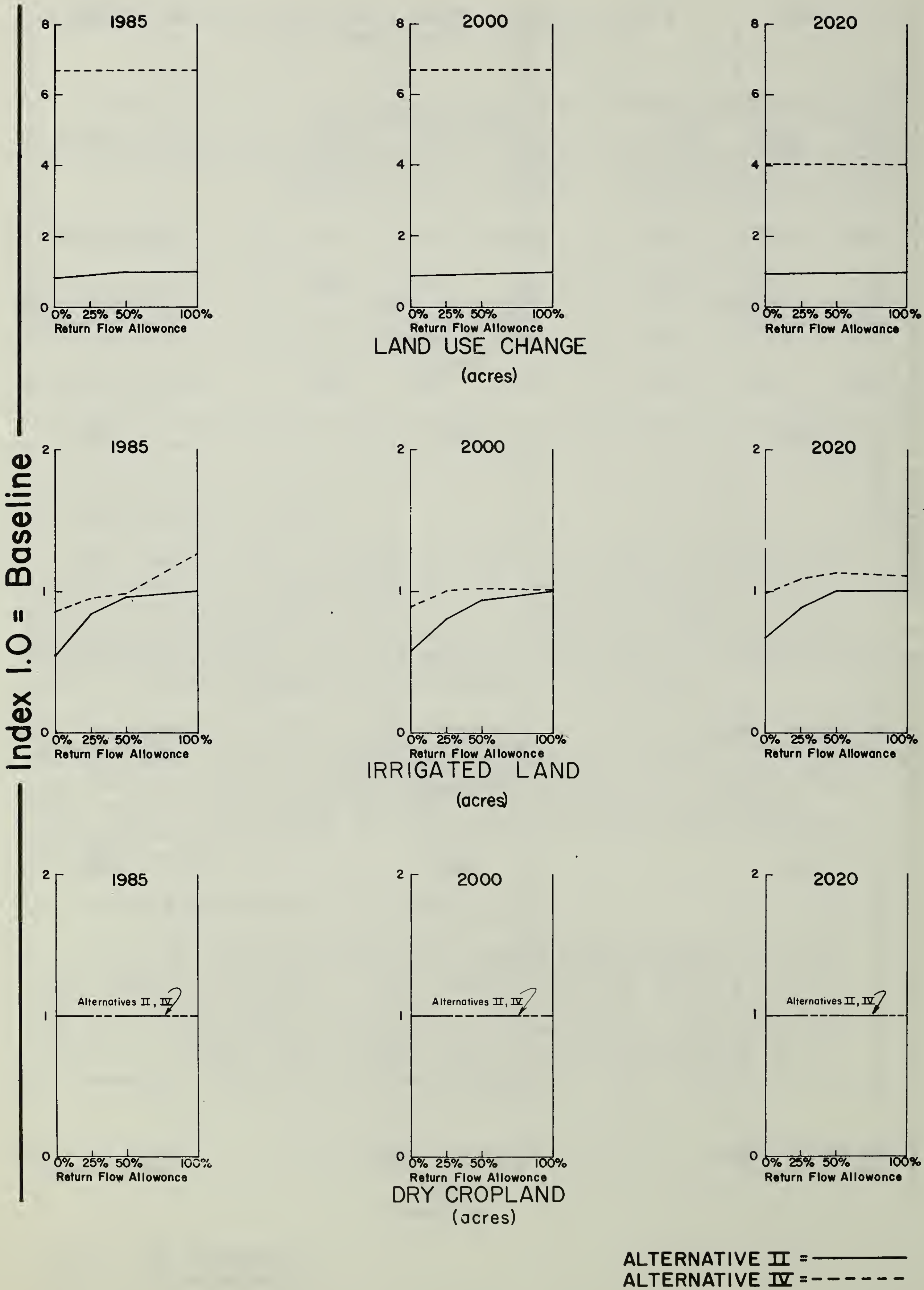


FIGURE 1-4

WATER QUALITY

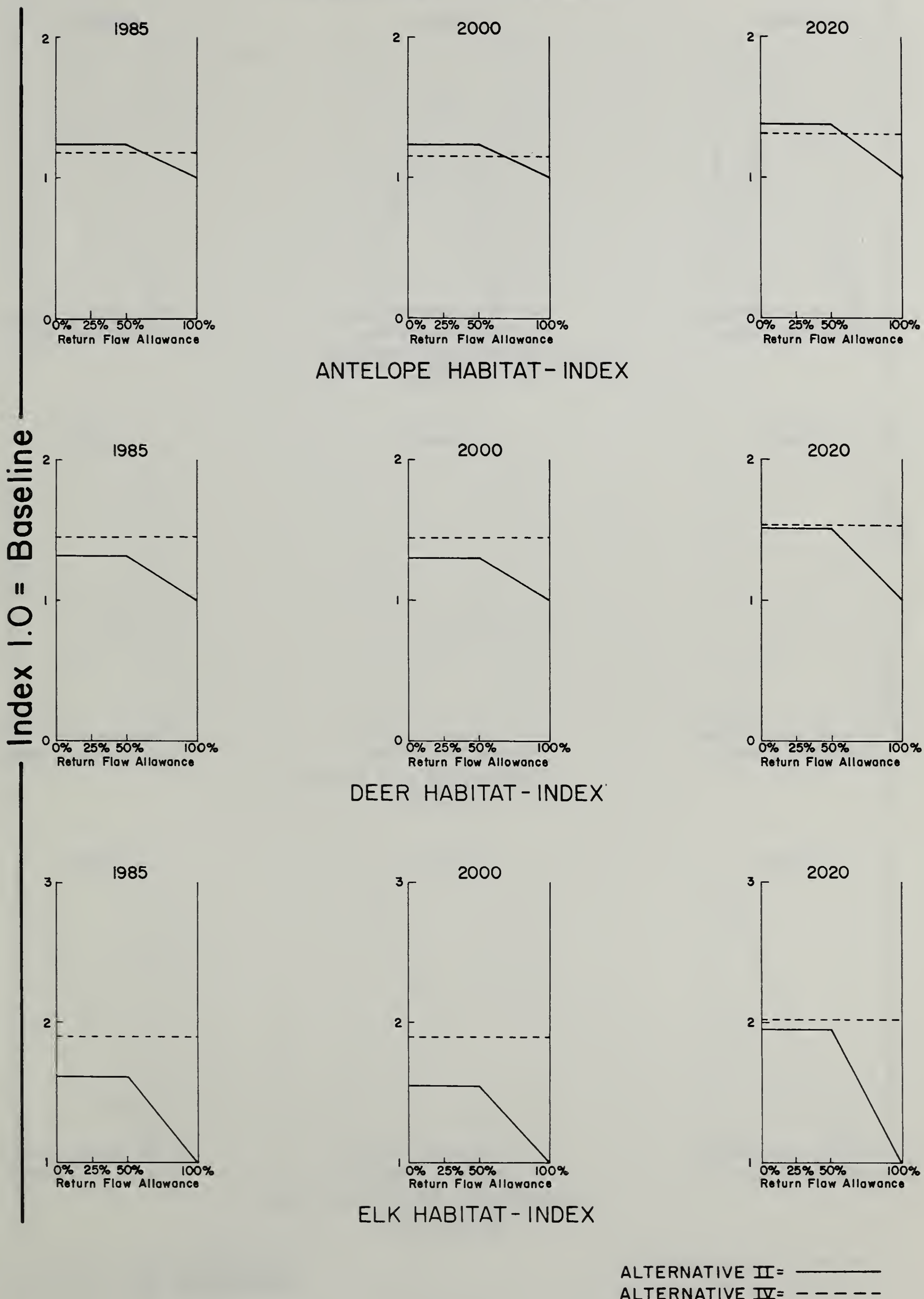


FIGURE 1-5

WATER QUALITY

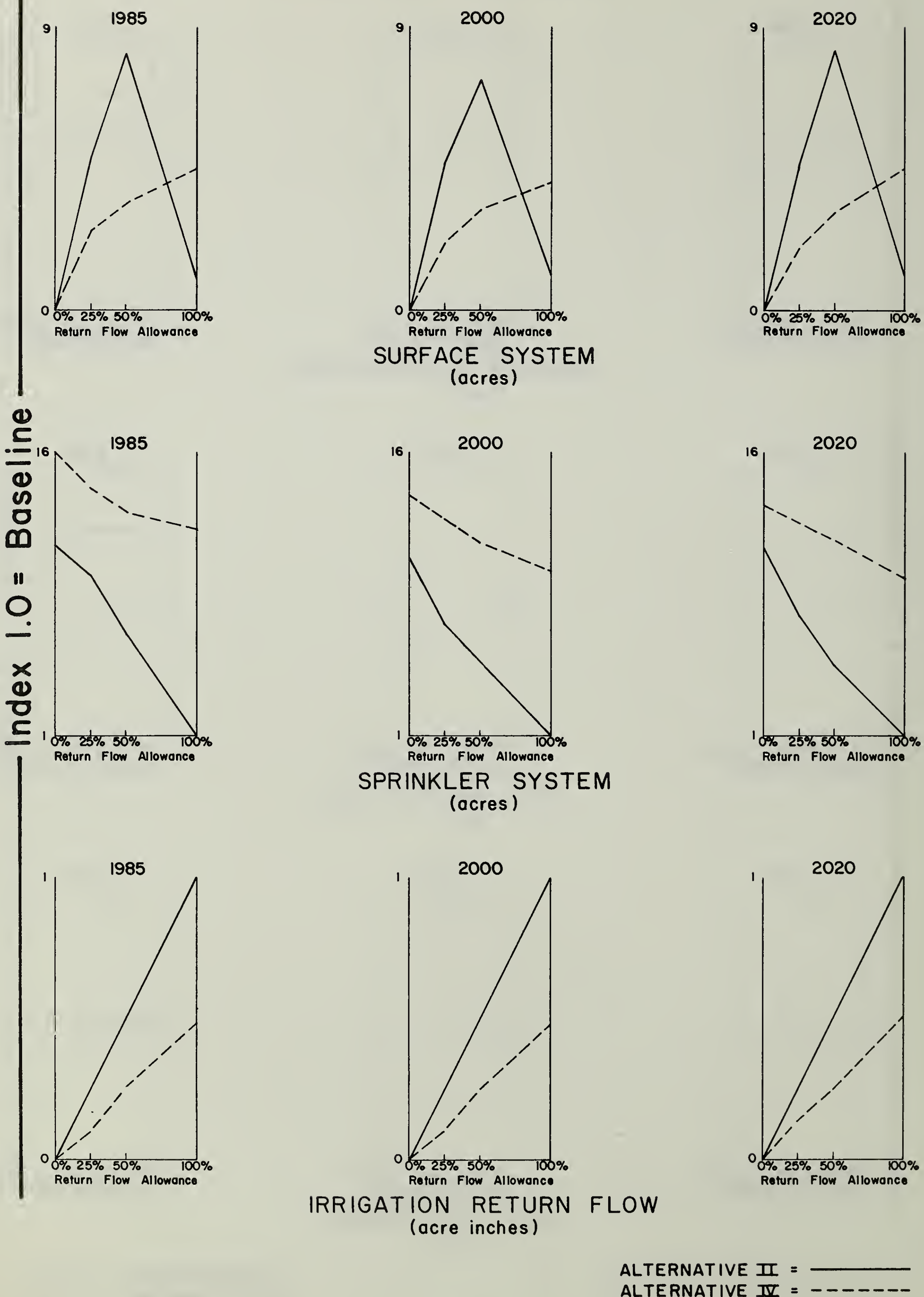


FIGURE 1-6

WATER QUALITY

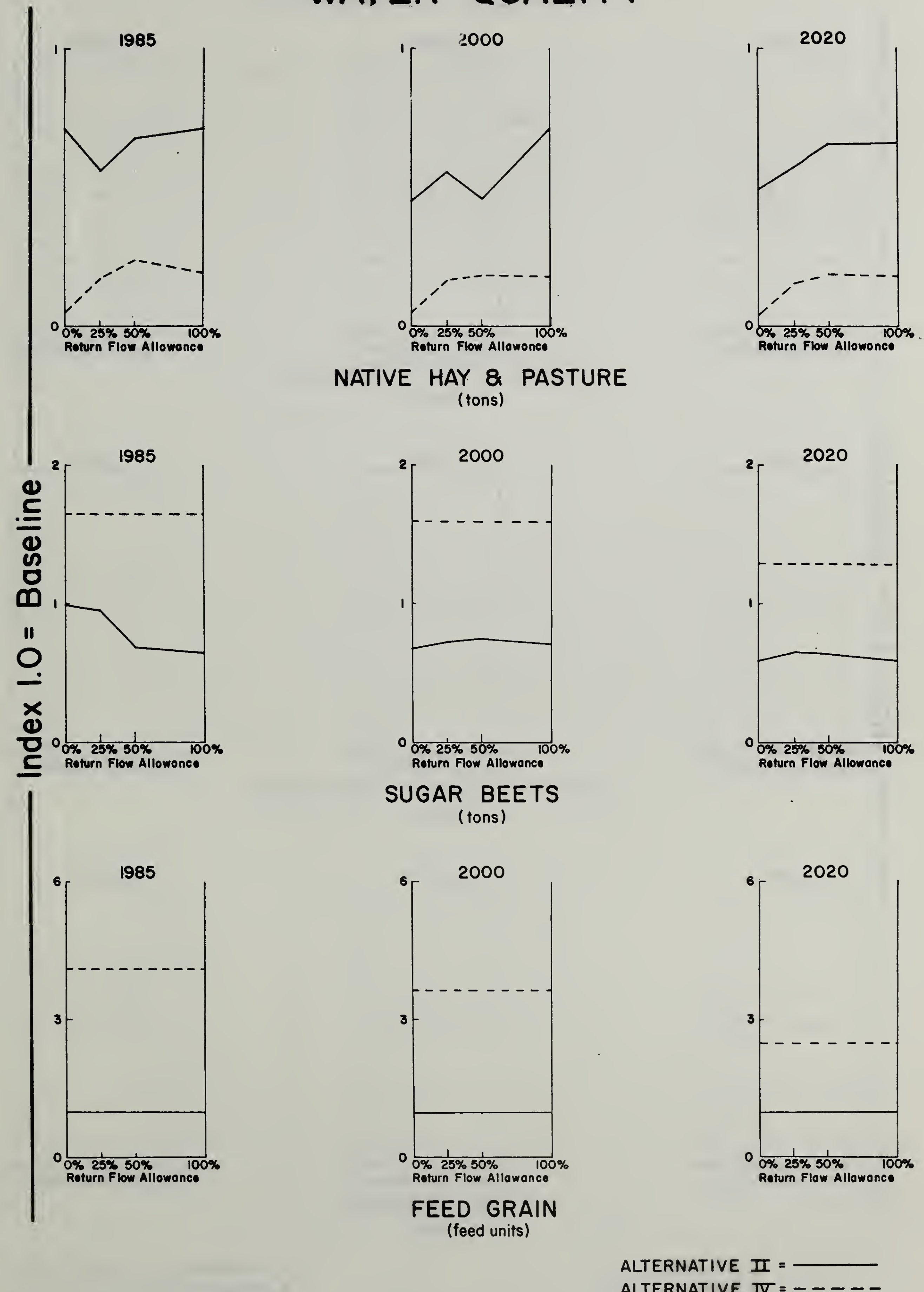


FIGURE 1-7

WATER QUALITY

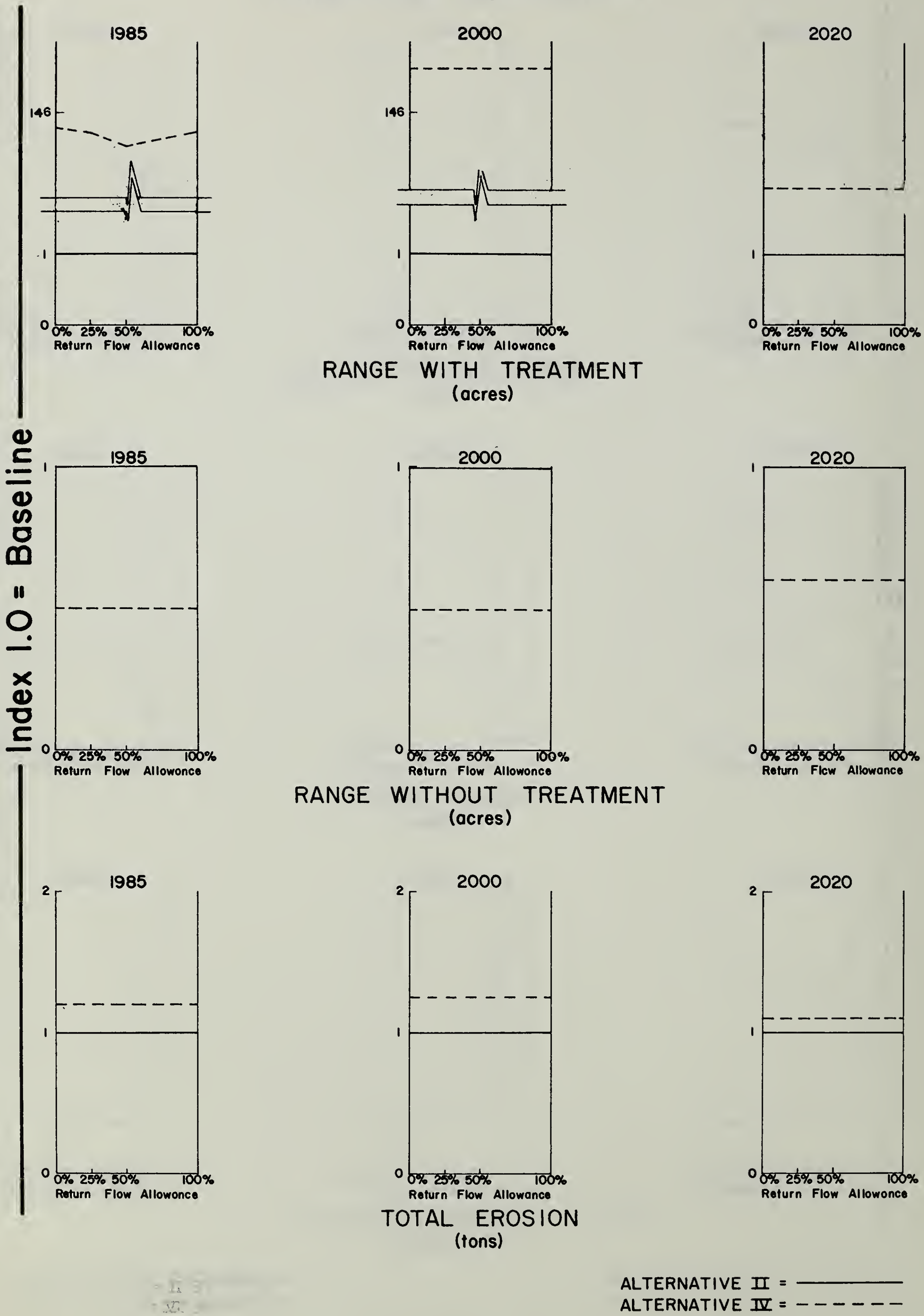


FIGURE 1-8

WATER QUALITY

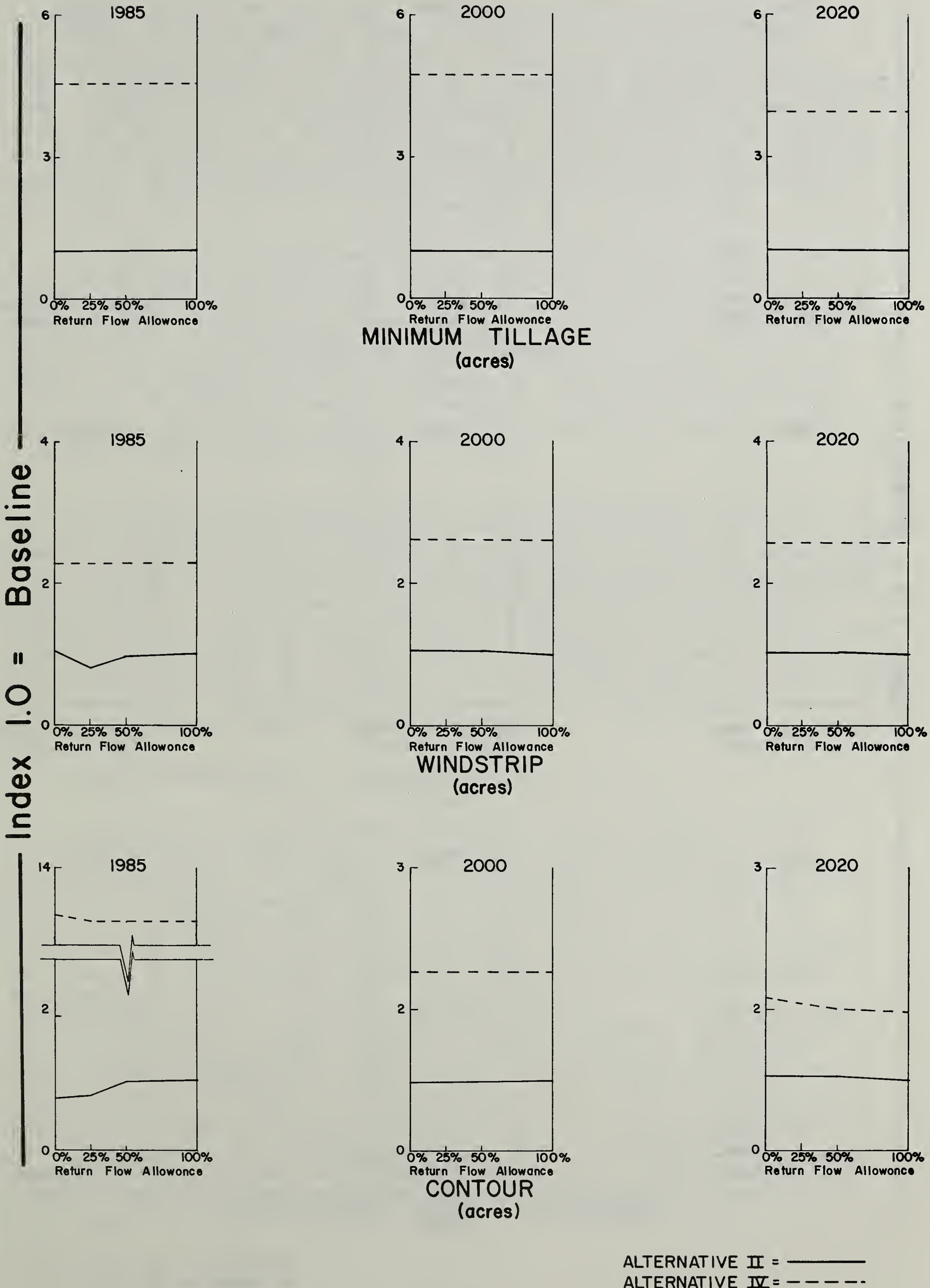


FIGURE 1-9

WATER QUALITY

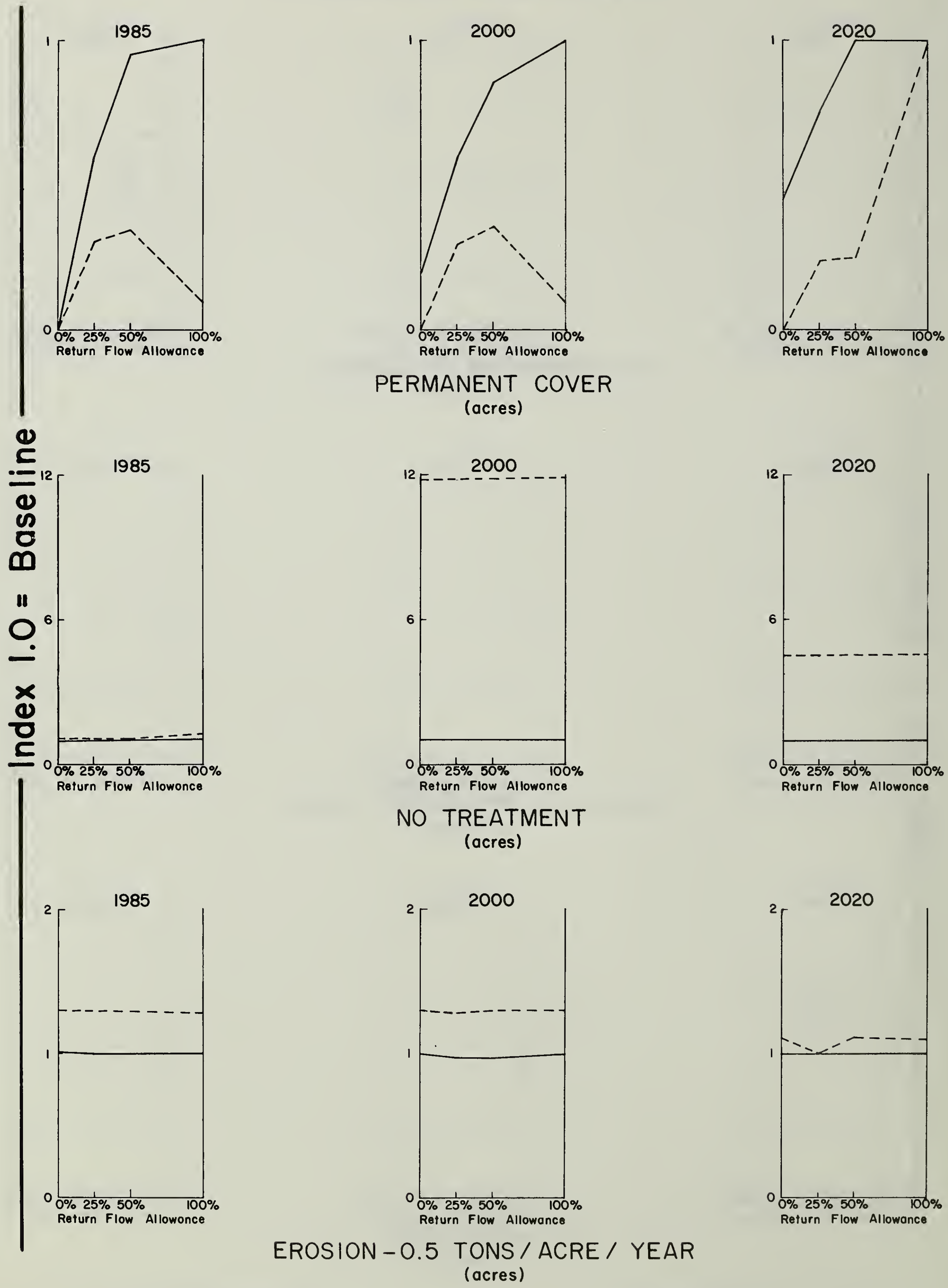


FIGURE 1-10

Erosion and Sediment

The alternatives that are constrained by OBERS crop production levels (Alternative Futures I, II, III, V, VI) by the year 1985, increase gross erosion by 6 percent, increase the area contributing over 0.5 ton/acre/year of sediment by 10 percent, decrease conservation land treatment by 13 percent, and increase land conversion from one land use to another by 388,000 acres. The economic return as compared to tons of erosion from land activities is about $8 per ton of erosion. The total direct program cost to provide erosion control technology including proper land use conversion would be $1.4 million.

By 1985, the alternatives that are not held to the OBERS crop production levels (Alternative Futures NED, IV) increase gross soil erosion by 24 percent, increase the area contributing over 0.5 ton/acre/year of sediment by 41 percent, increase conservation land treatment by 438 percent, and increase conversion of land by 2.6 million acres. The economic return as compared to tons of erosion from land activities is about $21 per ton of erosion. The total direct program cost to provide erosion control technology including proper land use conversion would be $27 million.

Alternative futures structured to show environmental quality decrease gross soil erosion by 15 percent, decrease the area contributing over 0.5 ton/acre/year of sediment by 27 percent, decreases conservation land treatment by 6 percent, and increases land conversion by 280,000 acres by 1985. The economic return as compared to tons of erosion from land activities is about $11 per ton of erosion. The total direct program cost to provide erosion control technology including proper land use conversion would be $1 million. No effort was made to include legal enforcement and implementation of zoning or Best Management Practices criteria that are aimed at erosion reduction.

Detailed Analysis

Compared to the soil erosion estimate for the present situation, all alternatives except the environmental quality alternatives increase soil erosion. However, in none of the alternatives was the permissible average annual soil loss rate exceeded. The driving factor to meet OBERS projections or expand the Basin's economic potential is crop and livestock production and the land use necessary to support it. The 1985 alternatives designed to meet OBERS projections are fairly consistent, ranging from a low increase of 0.02 tons per acre up to 0.03 tons per acre per year. Allowing the Basin to maximize economic potential without regard to OBERS crop and livestock projections raises annual erosion substantially. The lowest amount of increase is 0.08 tons per acre and the highest is 0.10 tons per acre. The level of conservation land treatment remains at slightly less than present levels for both the OBERS and EQ structured alternatives and increases tremendously (up to 5,249,000 acres of additional treatment by 1985) under the alternatives structured to maximize economic returns to the Basin.

The following tables summarize the averages and maximums for gross water erosion, the number of acres where the annual erosion rate is greater than 0.5 ton/acre/year, the acres of conservation treatment, and the acres of land use conversion. All calculations are measured against the present situation.

Table 1-3 Change in Annual Soil Erosion From Present Situation
(Present 5,513,000 tons)
Platte River Basin, Wyoming

Alternative Future Purpose	Annual Water Erosion (1,000) Tons					
	1985		2000		2020	
	Average	Maximum	Average	Maximum	Average	Maximum
Not to exceed OBERS Projections (10 Alternatives)	+333	+453	+280	+331	+1,155	+1,221
Maximum Agricultural Production (8 Alternatives)	+1,307	+1,440	+1,451	+1,728	+1,603	+1,635
Erosion Reduction (3 Alternatives)	-848	-1,431	-871	-1,451	-505	-848

Table 1-4 Change in Area with Erosion Greater than 0.5 ton/acre/year
(Present Area 4,604,000 Acres)
Platte River Basin, Wyoming

Alternative Future Purpose	Water Erosion Over 0.5 t/a/y (1,000 acres)					
	1985		2000		2020	
	Average	Maximum	Average	Maximum	Average	Maximum
Not to exceed OBERS Projections (10 Alternatives)	+473	+679	+487	+594	+1,309	+1,555
Maximum Agricultural Production (8 Alternatives)	+1,894	+1,958	+1,995	+2,041	+2,006	+2,075
Erosion Production (3 Alternatives)	-1,263	-1,696	-1,192	-1,646	-788	-1,359

Table 1-5 Change in Conservation Land Treatment
(Present Area 1,199,000 Acres)
Platte River Basin, Wyoming

Alternative Future Purpose	Conservation Land Treatment (1,000 acres)					
	1985		2000		2020	
	Average	Maximum	Average	Maximum	Average	Maximum
Not to exceed OBERS Production (10 Alternatives)	-154	-319	-71	-170	-239	-308
Maximum Agricultural Production (8 Alternatives)	+5,249	+5,314	+3,484	+3,681	+1,791	+1,875
Erosion Reduction (3 Alternatives)	-61	-78	-62	-62	-251	-252

Table 1-6 Proper Land Use Conversion
Platte River Basin, Wyoming

Alternative Future Purpose	Proper Land Use Conversion (1,000 Acres)					
	1985		2000		2020	
	Average	Maximum	Average	Maximum	Average	Maximum
Not to exceed OBERS Production (10 Alternatives)	388	450	369	396	384	479
Maximum Agricultural Production (8 Alternatives)	2,580	2,632	2,666	2,719	1,547	1,571
Erosion Reduction (3 Alternatives)	280	286	361	366	370	373

NED and EQ Ramifications

Tradeoffs between private revenue dollars and water erosion as shown in Table 1-7 "Ranking of Alternatives By Dollar to Erosion Ratios" indicates that the alternatives structured to maximize economic returns provide $21/ton for the greatest return per ton of erosion. Alternative Future II with zero return of irrigation flows provides the least at $7/ton.

The increase in efficiency in the use of the soil resource through the reduction of soil erosion rises from a $6/ton presently up to $11/ton

Table 1-7 Ranking of Alternatives by Dollar to Erosion Ratios
Platte River Basin, Wyoming

	Alternative Future [1/]	Total Annual Water Erosion 1,000 Tons	Net Revenue $ Millions	$/Ton Erosion Ratio	Rank
I	OBERS - Crop Production	5,831	47	8	6
II	OBERS - No Return Flow Reduction	5,831	47	8	6
II	OBERS - 50% Return Flow Reduction	5,833	47	8	6
II	OBERS - 75% Return Flow Reduction	5,854	46	8	6
II	OBERS - 100% Return Flow Reduction	5,812	42	7	7
III	OBERS - Municipal & Industrial Water	5,832	47	8	6
IV	Maximum Agricultural Production-No Return Flow Reduction	6,953	99	14	2
IV	Maximum Agricultural Production-50% Return Flow Reduction	6,949	99	14	2
IV	Maximum Agricultural Production-75% Return Flow Reduction	6,947	99	14	2
IV	Maximum Agricultural Production-100% Return Flow Reduction	6,946	98	14	2
V	OBERS - 50% Imported Irrigation Water	5,966	62	10	4
V	OBERS - 100% Imported Irrigation Water	5,842	49	8	6
V	OBERS - No Limit Imported Irrigation Water	5,832	50	9	5
VI	OBERS-Municipal & Industrial-Import Water-Drought	5,830	47	8	6
NED	Maximum Agricultural Production-No Project Development	6,667	136	20	1
NED	Maximum Agricultural Production-Project Development in NP Decree Area	6,669	137	21	1
NED	Maximum Agricultural Production-Project Development Outside NP Decree Area	6,705	141	21	1
NED	Maximum Agricultural Production-Project Development	6,719	143	21	1
EQ	10% Soil Erosion Reduction	5,348	46	9	5
EQ	20% Soil Erosion Reduction	4,665	45	10	4
EQ	30% Soil Erosion Reduction	4,082	44	11	3
Baseline		5,513	35	6	-

1/ Detailed description of Alternative Futures can be found on pages 2-2 through 2-13 of this report.

for the EQ structured alternatives and to $21/ton for NED structured alternatives. These alternatives forecast better use of land resources even though total gross erosion will probably increase.

Project or Program Possibility

Erosion control is an objective of soil conservationists and land managers. Much has been done in developing research and education techniques in order to get soil conservation practices installed. Many cooperative and cost-share programs are available to assist in this effort.

Project action can include conservation practices, both structural and non-structural, proper road construction and maintenance; sediment trapping, and sediment basins. The increase in crop production anticipates the maintenance and acceleration of land treatment efforts. The comparison of technical assistance and costs are shown below:

Table 1-8 Proper Land Use Conversion and Treatment for Erosion Control
Platte River Basin, Wyoming

Group of Alternatives	1985 Treatment Acres 1,000	USDA Technical Assist Man-Years	USDA Program $1,000	State Program $1,000	Local Contribution $1,000
Not to exceed OBERS Productions	388	19	159	256	466
Maximum Agricultural Production	7,829	391	3,210	5,167	9,395
Erosion Reduction	280	14	115	185	336

WATER MANAGEMENT GROUP

Problems and Concerns

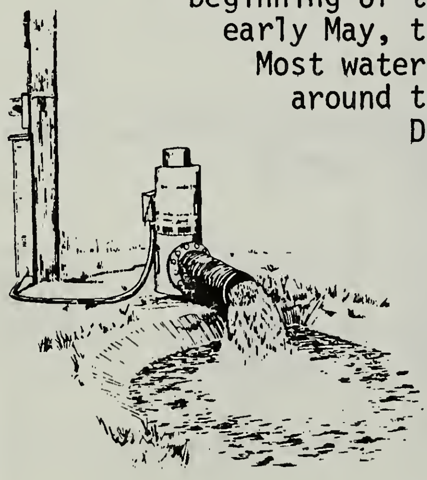
Irrigation Efficiency

Inefficient irrigation water use on-farm was identified as a concern. Many of the present on-farm irrigation systems were constructed in the late 1800's and early 1900's and have remained virtually unchanged since construction. Many of these systems are providing water to the plants in excess of their required needs, while some systems are not providing enough for required needs. Much of the Basins' irrigated land is flood irrigated which is generally an inefficient use of water. On the other hand, flood irrigation methods may be the most cost efficient method available to the landowner.

This concern was expressed by several Conservation Districts in the Basin, representatives of industry and through a watershed screening process conducted by the Soil Conservation Service.

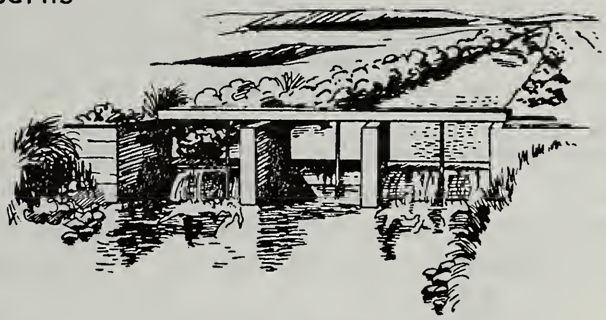
Irrigation Water Development

Lack of adequate water storage, limits to ground water development and inefficient irrigation water delivery systems were identified as concerns. Many areas in the Basin experience late season irrigation water shortage. Nearly all of the irrigation water supply is derived from the snow pack. An adequate supply is available from the beginning of the snow melt season, usually late April or early May, through the end of June or middle of July. Most water short areas report shortages beginning around the first to the middle part of July. Development of storage sites in individual watersheds has been limited in the past because of feasibility, legal constraints such as the North Platte River Court Decree, and existing water right conflicts.



In recent years, there has been extensive development of the ground water resources in the eastern part of the Basin. This development has been so extensive that the Wyoming State Engineer has declared three areas in that portion to be control areas. This means that no ground water development for irrigation may take place. The control areas in Laramie County were formed due to declining water tables and well interference problems. The control area in Goshen and Niobrara Counties was formed on request of the local users and after considerable aquifer modeling by the United States Geological Survey (USGS). Some areas of the Basin have ground water readily available, however, high costs have prevented development. (See General Availabilty of Ground Water Map-Appendix A.)

Irrigation water delivery concerns are generally associated with diversion structures and canals. Diversion structures are frequently not equipped to regulate the amount of water diverted. Many of the irrigation canals were constructed in the late 1800's or early 1900's and have received little or no maintainance. The major concern with canals is high water loss due to seepage, in some cases as much as 60 percent.



The water storage and delivery concern was identified by several Conservation Districts in the Basin; North Platte Citizens Committee; representatives of industry; and through a watershed screening process conducted by the Soil Conservation Service.

Flood Protection

Flood damage was identified as a concern. Flood damages occur to agricultural land adjacent to some of the streams in the Basin and to the urban areas of Laramie, Douglas, Casper, Cheyenne, and Glenrock.

Little flooding is experienced along the main stem of the North Platte River between Seminoe Reservoir and Whalen Diversion Dam. Some flooding is experienced along the North Platte River above Seminoe and below Whalen Diversion Dam. This flooding is usually limited to low-lying agricultural lands. Tributaries to the North Platte River and Laramie River frequently flood small amounts of agricultural land. Most of the damages occur to irrigation facilities. In some cases the flooding is felt to be beneficial to the land.

Some small tributaries that either enter or go under large canals, such as the Interstate Canal, pose a hazard to the canals. If the canal is full during a tributary flood, major damage occurs to the canal.

Urban flooding was identified for several towns and cities in the Basin. Laramie has experienced flooding from waters originating in the Laramie Mountains to the east of the city. The City of Cheyenne has been flooded from water in Dry and Crow Creeks. Douglas has had floods originating from a line of low hills east of town. Casper has a potential for flooding from several drainages originating on the slopes of Casper Mountain to the south of the city. The Town of Glenrock has had flooding from Deer Creek in the recent past.

Flooding concerns were identified by several Conservation Districts; North Platte Citizens Committee; and through a watershed screening process conducted by the Soil Conservation Service.

Zero Discharge

The detrimental effects of enforcing zero discharge of irrigation return flows on the patterns of agricultural water use were identified as a concern. Present irrigation systems in many cases contribute return flow to the streams in the Basin. These return flows are then used by water users downstream. This use and reuse has a tendency to level off the peak flows and extend the duration of streamflow. The concern focuses on the feeling that if zero discharge of irrigation return flows were enforced, historic flow patterns would be severely altered causing disruption of the appropriation process.

It should be noted that the Clean Water Act of 1977 eliminated much of the concern over zero discharge from the return flows of irrigated agriculture by eliminating all permit requirements.

Zero discharge concerns were expressed by the Inter-Departmental Water Conference of the State of Wyoming; and representatives of industry.

Locations of Concerns

Water management concerns are generally scattered throughout the entire Basin. The concerns regarding ground water development are concentrated in the eastern part of the Basin. Flooding concerns are limited to the urban areas previously named and to some of the tributaries of both the Laramie and North Platte Rivers.

Saratoga Valley

In the Saratoga Valley the following watersheds (see Watershed Group (WG) Map page 1-8) have been identified as having irrigation water shortages or have irrigation systems in need of reorganization: Big Creek (WG-1), Encampment (WG-2), Wood Mountain (WG-2), Brush Creek (WG-5), Cow and Calf (WG-3), Spring Creek Lake (WG-3), Pennock Mountain (WG-5), Jack Creek (WG-6) and Coad Mountain (WG-8). Approximately 30 percent of the irrigated land receives a full season water supply, which leaves about 70 percent or about 60,000 acres having some shortage during the irrigation season.

Minor flooding is experienced in the Wood Mountain, Cow and Calf, Spring Creek Lake, Jack Creek and Coad Mountain Watersheds. This flooding usually occurs to low-lying haylands that are scattered along drainages.

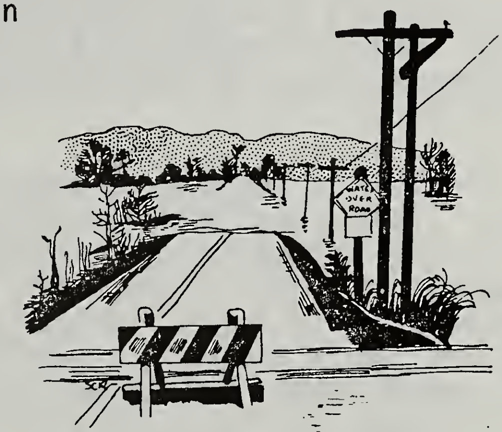
Nearly all of the irrigated land has some return flows originating from them sometime during the irrigation season.

Pathfinder-Guernsey

The area of the Basin from Pathfinder Reservoir to Guernsey Reservoir has irrigation water shortages or have irrigation systems in

need of reorganization in the Bates Creek (WG-16), Reno Hill (WG-17), Boxelder Creek (WG-18), LaPrele Creek (WG-20), Wagonhound (WG-20), LaBonte (WG-21), Horseshoe Creek (WG-23) and Cottonwood Creek (WG-24) Watersheds. About 51 percent of the irrigated land has some shortage during the irrigation season which affects about 25,400 acres.

Minor flooding to hayland and irrigation facilities affects many acres along drainages in this portion of the Basin. Major flooding has occurred in the Reno Hill Watershed along Deer Creek. Also within this watershed is the Town of Glenrock which has experienced flooding from Deer Creek. The Town of Douglas in the Douglas Watershed (WG-19) has experienced flooding from runoff originating in a low line of hills east of town. The city of Casper in the Casper Mountain Watershed (WG-17), has had flooding from several drainages that head on the north flank of Casper Mountain. The Horseshoe Creek Watershed has had flooding to cropland in the past.



In this portion of the Basin, nearly all of the irrigated land has some return flows originating from them during the irrigation season.

Laramie Plains-Medicine Bow

About 113,500 acres in the Laramie Plains and Medicine Bow area of the Basin have irrigation water shortages sometime during the irrigation season. The Rock River (WG-41), Snowy Range (WG-9), Difficulty (WG-9), Pazeka Lake (WG-42), Lone Tree (WG-37), Downey Lakes (WG-38), Centennial (WG-39), Bamforth Lake (WG-39), and Cooper (WG-40) Watersheds have been identfied as having irrigation water shortages or have irrigation systems in need of reorganization or both.

Flooding to irrigated land is very minor in this part of the Basin. Some flooding does occur, but it is to scattered acres of low land adjacent to drainages. Some flooding to parts of the City of Laramie has occurred from runoff originating in the Laramie Mountains east of the city.

In this portion of the Basin as in other portions, nearly all of the irrigated land has some return flows originating from them during the irrigation season.

Eastern Basin

The eastern part of the Basin which includes Platte, Goshen and Laramie Counties has the most intensive irrigation operations. Much of the land irrigated is used to raise row crops such as sugar beets,

beans and corn. There are nearly 291,300 acres of irrigated land in these counties. Nearly all of these irrigated lands have some return flows during the irrigation season.

Red Cloud Slough (WG-25), Goshen Hole (WG-27), Kelly (WG-25), Upper Chugwater (WG-30), Bluegrass (WG-29), Sybille (WG-29), Richeau (WG-30), Rabbit Creek (WG-31), Bluejay Mountain (WG-28), Fox Creek (WG-32), Hawksprings (WG-32) and Lyman (WG-32) Watersheds have all experienced irrigation water shortages. The shortages affect about 109,500 acres.

The City of Cheyenne has had flooding from both Dry and Crow Creeks. These flood waters originate in the Laramie Mountains west of the city. Flooding also occurs to hay and cropland scattered throughout this part of the Basin and usually occurs to land that is adjacent to drainages. Flood waters from the Molly Fork (WG-25) Watershed pose a potential threat to the Interstate Canal. This canal serves nearly 120,000 acres of irrigated land in Wyoming and Nebraska, with nearly 18,600 acres being in Wyoming.

This portion of the Basin, along with the Niobrara portion, has extensive development of the ground water resources. There are about 169,000 acres in the eastern part of the Basin that are being irrigated by ground water.

Basic Cause and Trends

As both agriculture and industry continue to expand to meet the demands for food, fiber, goods and services, the demands on the water resource will also expand. Water management in the past, particularly in agriculture, has been inefficient for the most part. As a way to meet all the demands, more efficient use of water will be needed.

Seriousness and Complexity of the Concerns

Presently in the Basin, there are about 308,400 acres of irrigated land that are short of irrigation water. About 180,420 acres of irrigated land now contribute pollutants through non-point source return flows. Agriculture now uses about 743,000 acre-feet of water each year in the production of food and fiber. Average annual municipal and industrial use of water in the Basin is 17,900 acre-feet. The Basin's average annual water supply is about 2,552,000 acre-feet. Flooding in the Basin causes an average annual dollar damage of $670,000 (1975 Price Base).

Analysis of Problems and Concerns

This group of four concerns has National Economic Development as their primary objective. These concerns were grouped because of their anticipated interactions during analysis. (See Table 1-9.)

Table 1-9 WATER MANAGEMENT CONCERNS
Platte River Basin, Wyoming

Primary Objective	Concern	Components of Objective: 1st Level Desired Results	2nd Level Actions that can be taken	3rd Level Programs that could be used
NED	IRRIGATION EFFICIENCY. (Unit of measure is Increased Irrigation Efficiency. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Increase output of agricultural goods and/or efficient use of resources.	Irrigation water management, structural measures such as diversions, drainage, field measures such as lined ditches, pipelines, contour ditches, border dikes, furrows, gated pipe, siphons and sprinklers.	Conservation operations, ACP cost-sharing, Great Plains Conservation Program, Farmers Home Administration, State and Private loan programs.
NED	IRRIGATION WATER DEVELOPMENT. (Unit of measure is Full Water Supply - Irrigated. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Increased output of agricultural goods and/or efficient use of resources.	Irrigation water management, legal constraints, reorganization of irrigation systems which would include such things as reservoirs, diversions, ditch lining, consolidation of ditches, pipelines: Develop ground water in areas where available. Resolve legal problem of water and adjudicated lands & water & unadjudicated lands.	Conservation operations, ACP cost-sharing, PL-566 projects Resource Conservation and Development project measures, Great Plains Conservation Program, Farmers Home Admin. Programs, state and private loan programs.

Table 1-9 (cont.) WATER MANAGEMENT CONCERNS
Platte River Basin, Wyoming

Primary Objective	Concern	Components of Objective		
		1st Level Desired Results	2nd Level Actions that can be taken	3rd Level Programs that could be used
NED	FLOOD PROTECTION. (Unit of measure is Agricultural Flooding. See Table 1-30 and Synopsis and Commitment Tables in Appendix B.)	Increase agricultural output, more efficient use of agricultural resources & protection of life and property.	Management through zoning flood insurance & flood proofing. Structural measures such as flood water retarding structures floodways & diversions.	PL-566 projects, Conservation operations, Resource Conservation and Development Project measures, Great Plains Conservation Program, ACP cost-sharing, flood insurance programs through HUD, state & private loan program.
NED	ZERO DISCHARGE. (Unit of measure is Zero Discharge Systems. See Table 1-30 and Synopsis and Commitment Tables in Appendix B.)	Maintain or improve existing distribution for efficient water use.	Provide information on the trade-offs involved in the enforcing of the zero discharge provisions of the 1972 Water Quality Act Amendments.	--------------

Legal constraints in the form of water compacts and court decrees play an important part in the Basin. Following is a summary of the legal constraints presently in force.

Laramie River Decree The State of Colorado can divert from the Laramie River and its tributaries 49,375 acre-feet of water each calendar year for use in Colorado, of which 19,875 acre-feet per year may be diverted out-of-basin. The return flow and remaining river water is allocated to Wyoming.

North Platte River Decree The decree limits irrigation in the State of Wyoming on the main stem of the North Platte River above Guernsey Reservoir and the North Platte tributaries above Pathfinder Dam to 168,000 acres of land, exclusive of the Kendrick Project. Exclusive of Seminoe Reservoir, not more than 18,000 acre-feet of irrigation water may be stored in Wyoming on the North Platte River or its tributaries above Pathfinder Reservoir in any water year. The natural flow of the North Platte River from Guernsey Dam to the Tri-State Dam (1 mile beyond the state line in Nebraska) is divided 25 percent to Wyoming and 75 percent to Nebraska. Glendo Reservoir has a right to store, in addition to evaporation, 40,000 acre-feet of the natural flow of the North Platte River and its tributaries below Pathfinder Dam. Of this storage, 15,000 acre-feet are for irrigation in Wyoming below Guernsey Dam, and 25,000 acre-feet are for irrigation in Nebraska. The storage in Glendo Reservoir, including carryover, may not exceed 100,000 acre-feet.

Upper Niobrara River Compact The compact is an agreement between Wyoming and Nebraska for the regulation of Niobrara River water west of Range 55 West (6th Principle Meridian). The compact limits the size of stock water ponds. The apportionment of ground water was delayed until adequate information about ground water becomes available.

The constraints of the existing North Platte Court Decree were not enforced in the analysis of individual concerns in the Water Mangement group. However, each of the alternative futures used to analyze the concerns show the acres needed to be irrigated to reach the goals of the alternative future. Shown also are the irrigated acres within the boundary of the North Platte Court Decree area that are needed to meet the goals. It should be noted that in none of the alternative futures analyzed was it necessary to fully use the acres available for irrigation within the decree area boundary.

Desired results in solving the concerns are generally about the same. They are to increase output of agricultural goods; efficient use of resources; protect life and property; provide adequate water supply for agriculture base; and maintain or improve existing distribution systems for efficient water use.

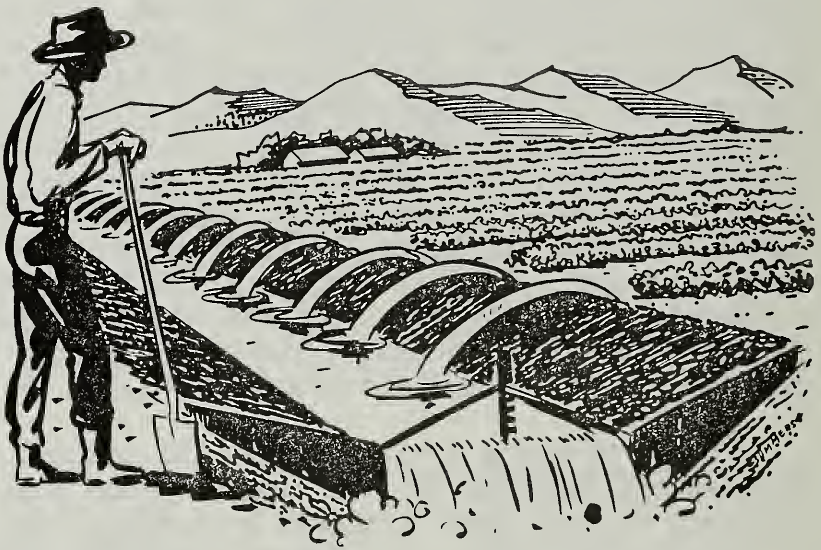
Ways of accomplishing the desired results would include irrigation water management; land management through zoning, flood insurance and flood proofing; and structural measures such as diversions, drainage,

lined ditches, storage reservoirs, floodwater retarding reservoirs, floodways; consolidation of ditches, and pipelines. Providing information on the trade-offs involved in solving a problem or reaching a desired result is also a method.

Both public and private financing would be needed to accomplish the desired results. USDA presently has programs to assist landowners in specific structural and nonstructural actions. Some of these programs are cost-shared.

Irrigation Efficiency

Improved irrigation water use efficiency on-farm increases total net revenue an average of 10 percent for the three future time periods of 1985, 2000, and 2020. Labor required increases an average of 12 percent, but the total production costs including labor jump upward about 21 percent. Thus, the net return per dollar of production costs becomes smaller.



Although the total irrigated acreage does not change significantly there is an increase in the acreage irrigated with a full water supply. Ground water irrigation is decreased with surface source irrigation increasing.

Soil erosion and irrigation water return flows increase slightly in the first two time periods and decrease slightly in 2020.

Detailed Analysis

Irrigation efficiency concern has to do with the application of irrigation water on-farms. Off-farm conveyance systems are not a part of this concern.

In the analysis it is assumed that increased on-farm efficiency is accomplished by converting from methods with lower irrigation efficiency to methods with higher irrigation efficiencies. Each irrigation type within each watershed group has an efficiency associated with it. Efficiencies are averages of irrigation efficiencies for each irrigation type within a watershed group. Efficiencies for each irrigation type are shown in the "Basic Land Relationships Working Paper". Irrigation types are shown and defined in the "Land Inventory Working Paper".

Alternative Future I and a modification of Alternative Future I that allowed no land conversions were used to analyze this concern. Conversions to other land uses in the unmodified Alternative Future I were allowed to occur within a watershed group only if the land use occurred historically within the same watershed group.

Analyses were made for the years 1985, 2000, 2020 for both alternative futures. The effects of improved irrigation efficiency on selected parameters are shown graphically following the discussion of this concern on Figures 1-11 to 1-13. The graphs are designed to show magnitude and direction of change rather than absolute values. The Alternative Future I with no land use conversions is defined to be equal to 1.0. The index then indicates the variance of Alternative Future I from the no conversion Alternative Future I.

Conversion of noncritical rangeland to dry cropland is allowed within Alternative Future I. This is, of course, not directly involved in irrigation efficiency, but it is a part of the assumptions of Alternative Future I. Allowing the conversion to dry cropland does broaden the range of interrelationships allowed to occur and approaches a more realistic situation.

Table 1-10 lists the acreages of conversion that occur in Alternative Future I in each time period.

Table 1-10 Land Use Change
Platte River Basin, Wyoming

Land Use Change	Year 1985	Year 2000	Year 2020
	Acres		
Dry cropland to Irrigation Type 1 1/	800	870	340
Dry cropland to Irrigation Type 2	4,960	15,950	20,040
Irrigation Type 2 to Irrigation Type 1	44,670	44,390	43,630
Irrigation Type 3 to Irrigation Type 2	33,420	41,560	29,840
Irrigation Type 3 to dry cropland	24,290	24,290	16,200
Irrigation Type 4 to Irrigation Type 2	14,490	4,130	3,870
Irrigation Type 5 to Irrigation Type 2	750	150	410
Range grassland to dry cropland	183,890	175,090	175,580
Range grassland to Irrigation Type 1	5,940	0	0
Range grassland to Irrigation Type 2	0	0	0
Range meadows to dry cropland	18,140	18,140	17,360
Range meadows to Irrigation Type 1	0	0	780
Range meadows to Irrigation Type 2	0	0	0
Range sagebrush to dry cropland	165,150	165,150	165,150
Range sagebrush to Irrigation Type 1	0	0	0
Range sagebrush to Irrigation Type 2	0	0	0

1/ Irrigation Type definitions are found on pages 22 and 23 of Land Inventory Working Paper, Platte River Basin Cooperative Study, Wyoming, April 1979.

Table 1-11 Effects of Increasing Irrigation Water Application Efficiency Platte River Basin, Wyoming

		1985	2000	2020
Net Revenue	$	+3,988,000	+6,018,000	+6,767,000
Production Cost	$	+10,489,000	+10,494,000	+11,374,000
Labor	%	+12.8	+12.5	+11.4

Thus as Table 1-11 indicates the land conversion results show a situation where net revenue is increased, but the increase is about half as great as the increase in total production cost.

The change in total irrigated acres as shown in Table 1-12 is relatively minor, only increasing about 2,900 acres in year 1985 and 5,400 acres in year 2020, while decreasing about 3,600 acres in year 2000. The source and type of irrigation vary considerably more. The on-farm systems that have ground water as the water source and sprinklers as the distribution system decrease in all three time frames. However, the acreage of irrigation from a surface water source and surface distribution systems increase with the land conversion. The acreage of surface water source and surface sprinkler irrigation increases about 3,900 acres in year 1985 and 500 acres in year 2020, but decreased about 2,100 acres in year 2000. Acreage changes indicate the change from Alternative Future I that allowed no land use conversions.

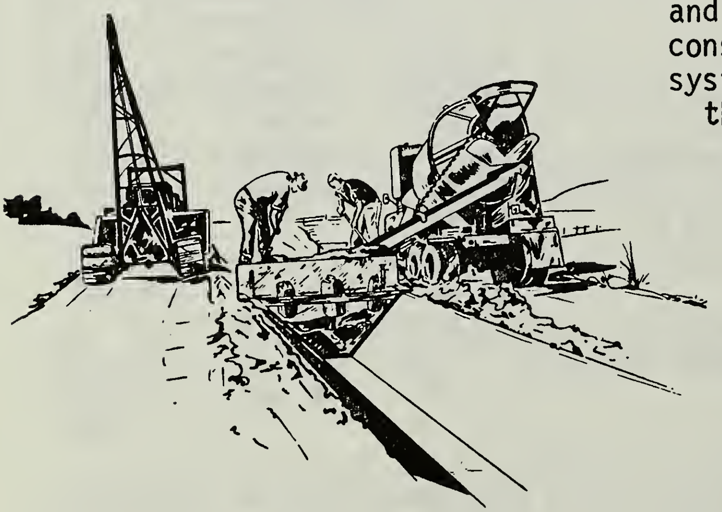


Table 1-12 Change In Irrigated Acres
Platte River Basin, Wyoming

	Year		
	1985	2000	2020
	Acres		
Total Irrigation-Alternative Future I with No Land Conversion	250,000	250,090	221,660
Total Irrigation-Alternative Future I with Land Conversion	252,865	246,500	227,047
Irrigation Source and System			
Ground-sprinkler	-6,238	-12,046	-13,122
Surface-surface	5,205	10,607	18,001
Surface-sprinkler	3,898	-2,133	508
Net Change	2,865	-3,590	5,387

The number of acres irrigated with a full season water supply versus a short or less than full season water supply increases in the three future time periods. This reflects the shift to more efficient irrigation and the subsequent increased water available.

Soil erosion is affected very little, varying less than five percent in all time periods for both total soil erosion and for the total acreage with an annual soil erosion rate exceeding 0.5 ton per acre. Much of this variance is probably not related to the conversion to irrigated land, but rather to the conversion of rangeland to dry cropland and the resultant effects of production on the remaining rangeland. The acreage of dry cropland increases an average of 50 percent in all three future time periods.

The acreage of minimum tillage and permanent cover increases as land conversion occurs. Conservation treatment acreages shift considerably, the largest being the increase in no treatment acres. The acreage of contour farming declines in years 1985 and 2020, respectively, but increases in year 2000. The acreage of wind strip farming declines about one-third in all three time periods.

The effect on big game habitat of increased irrigation efficiency through the associated land conversion is minimal. The greatest increase in the big game index is for elk habitat. The big game habitat indices are only associated directly with the rangeland activities. Although there is conversion of rangeland to cropland, the acreage converted is not great enough to cause significant changes in big game habitat capabilities.

The above has been concerned with the effects on the Basin as a whole. Within certain areas or watershed groups the effects may be quite severe. Net revenue and labor requirements may affect individual operators beyond their ability to survive. At the same time, production costs changes may imply changes in inputs that the agribusiness sector is unable to support or survive.

The inter-basin effects of increasing irrigation efficiency are significant. For example, the conversion of rangeland to dry cropland in Alternative Future I amounts to 25,400 acres in watershed group 02 (see Watershed Group (WG) map page 1-6); 157,900 acres in watershed group 08; 137,900 acres in watershed group 23; and 46,000 acres in watershed group 26. Most of this rangeland conversion to dry cropland is for winter wheat. These examples and the following examples are for the year 1985.

Another change occurs in watershed groups 32, 33 and 34. All dry cropland in these three watershed groups is taken out of production in Alternative Future I.

In watershed groups where rangeland is converted to irrigated cropland, the net revenue, production cost, and labor requirements, effects may be significant. The acreages converted to irrigation in Alternative Future I, however, are fewer than the acres converted to dry cropland. Conversions from Irrigation Type II or III to Irrigation Type I are not as drastic a change in terms of production inputs unless a simultaneous shift is made from surface distribution systems to sprinkler systems. In watershed groups 02 through 08, about 34,900 acres are converted from Irrigation Type II to Irrigation Type I. However, most of this conversion still remains in permanent native hay with a surface distribution irrigation system. There is a larger acreage with a full water supply.

NED-EQ Ramifications

NED ramifications of increasing irrigation water application efficiency are greater than the EQ ramifications. The total net revenue of this Basin increases an average of 10 percent, production cost increase 20 percent and labor requirements increase about 12 percent. Inter-basin effects in many instances, however, are much greater than the Basin effects.

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN INCREASED IRRIGATION EFFICIENCY AND SELECTED ITEMS, YEARS 1985, 2000, 2020. THE SAME RELATIONSHIP IN THE BASELINE ALTERNATIVE THAT ALLOWS NO LAND USE CONVERSIONS IS THE BASIS FOR COMPARISON.

IRRIGATION EFFICIENCY

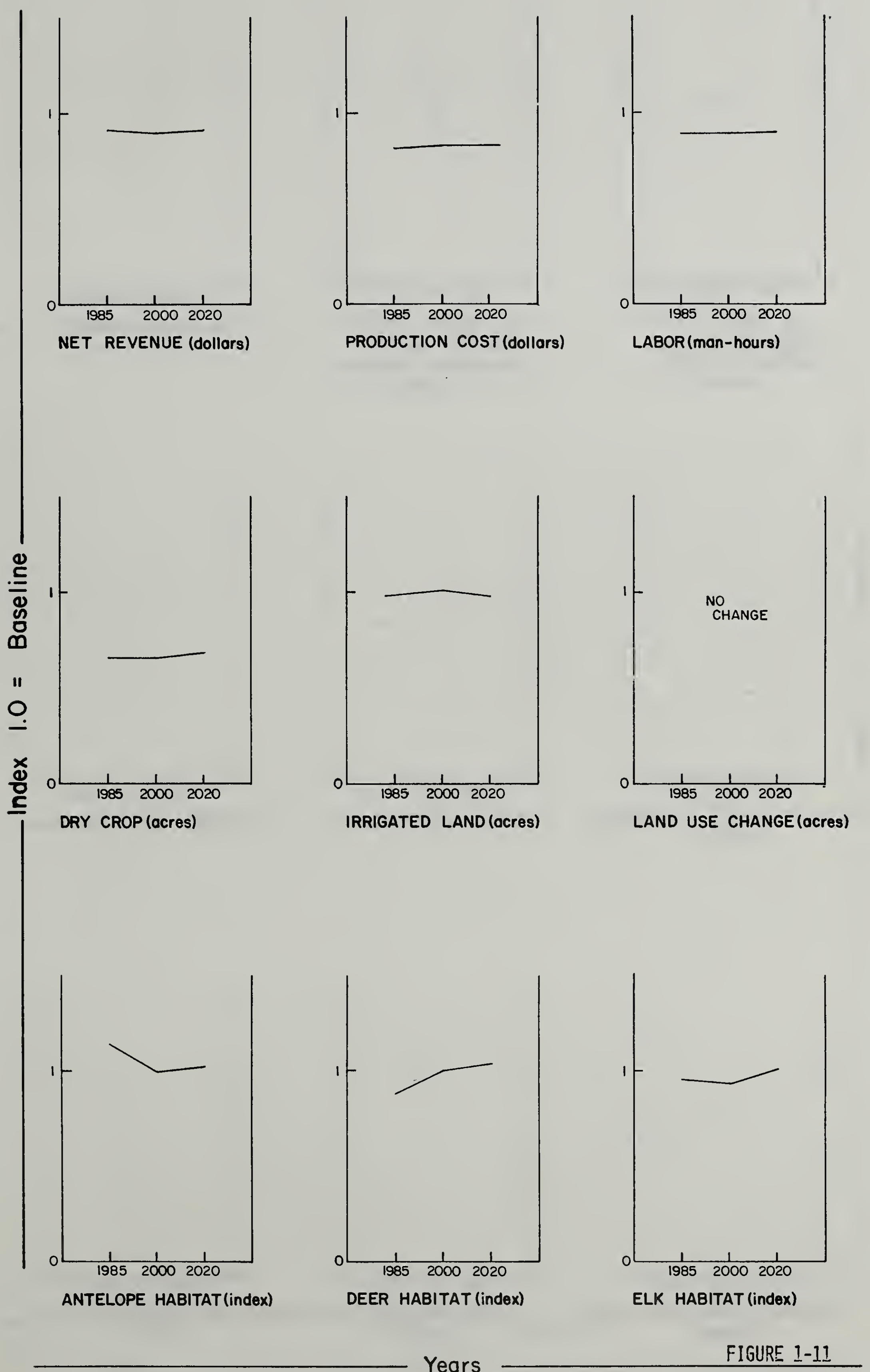


FIGURE 1-11

IRRIGATION EFFICIENCY

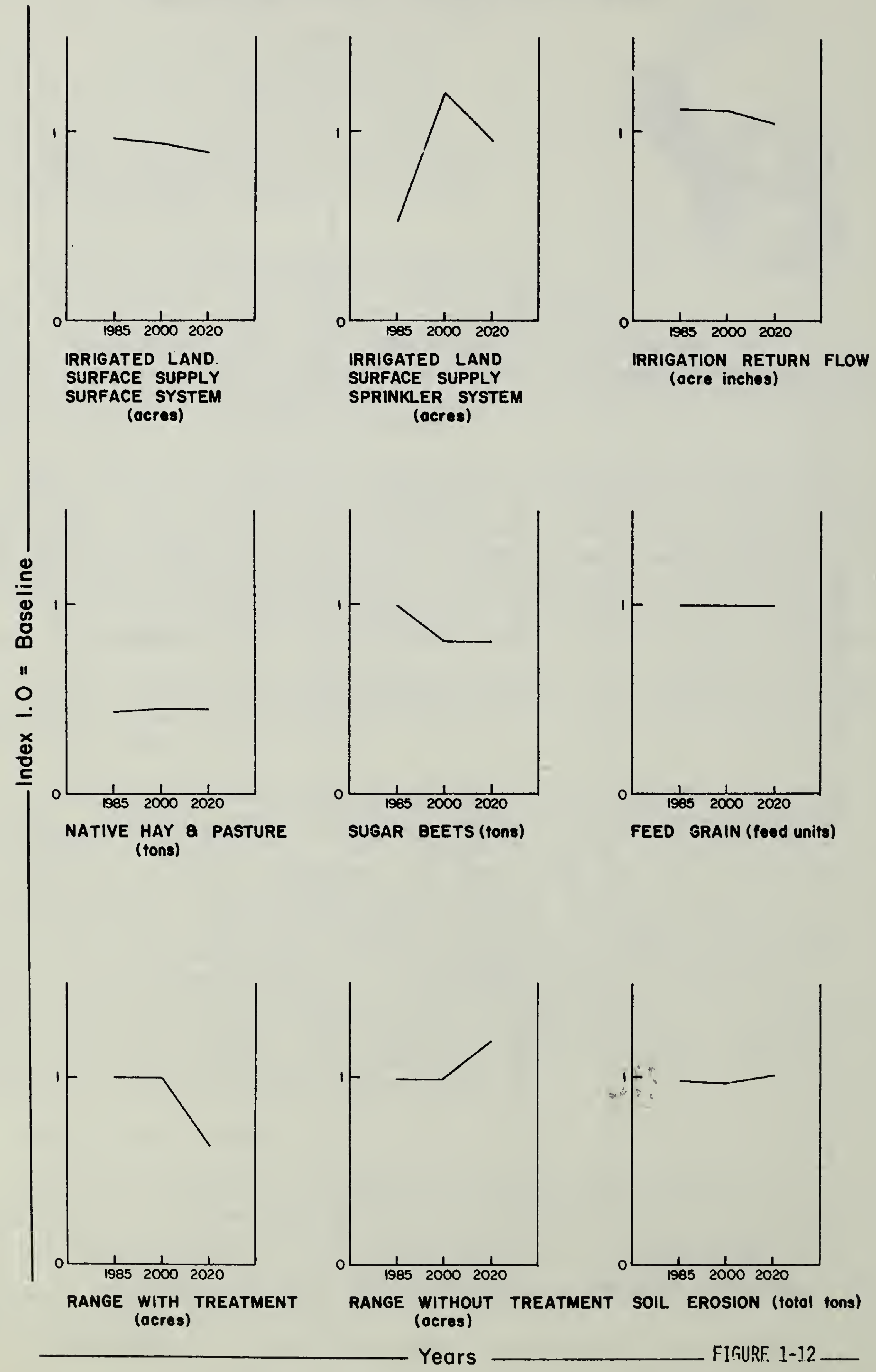


FIGURE 1-12

IRRIGATION EFFICIENCY

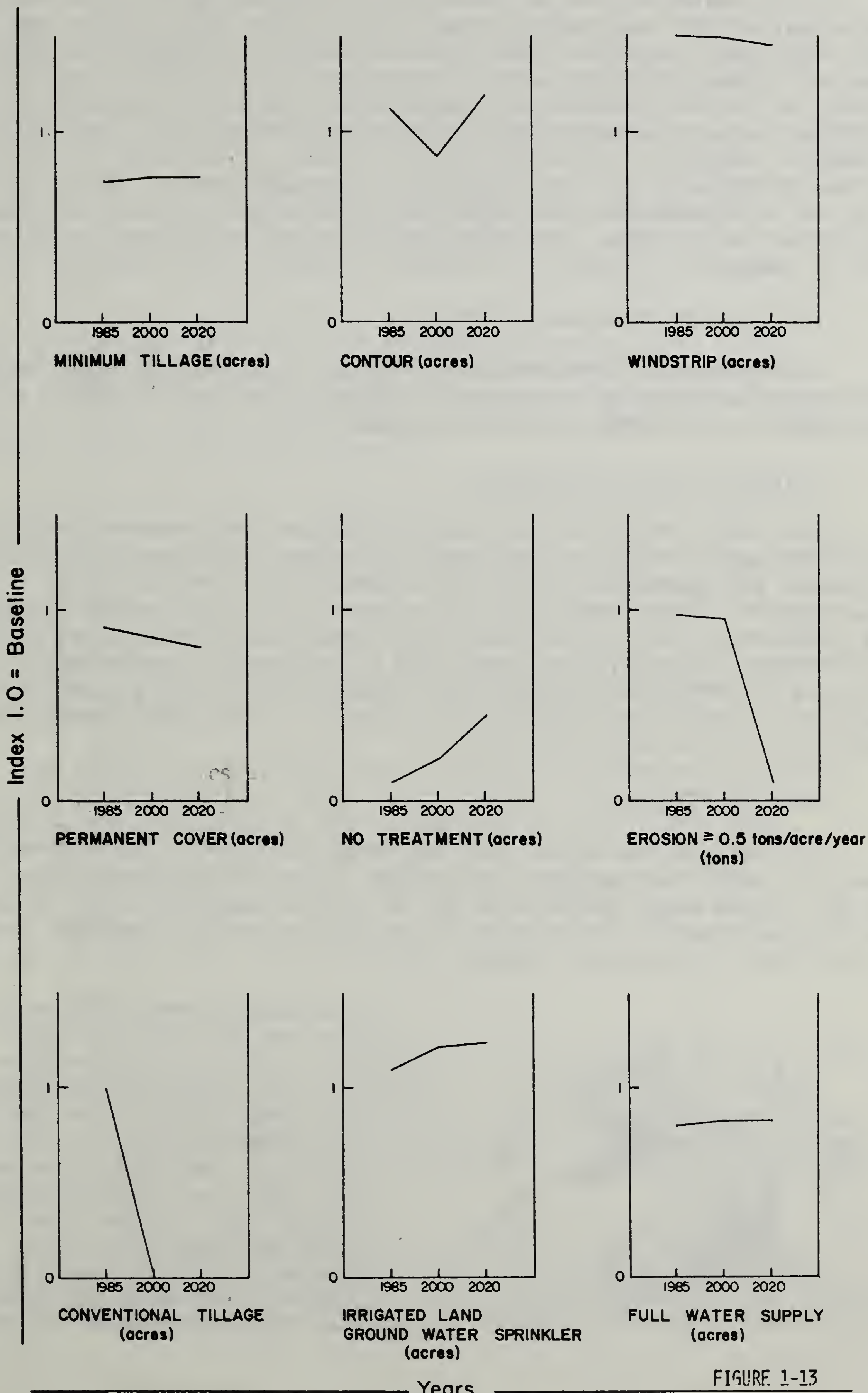


FIGURE 1-13

The EQ ramifications, as reflected in big game habitat indices and the amount of soil erosion at annual rates greater than 0.5 ton per acre, are less significant than those for NED. All changes are less than six percent with many of the parameters changing less than four percent as the irrigation water application efficiency increases. Individual watershed groups will be affected differently. The large acreage of rangeland converted to dry cropland can decrease the big game habitat significantly in the respective watershed groups. Conversion from one irrigation type to another within a watershed group will have less effect on big game. An undetermined amount of wetlands would be lost or damaged as a result of improved irrigation efficiencies.

Project or Program Possibility

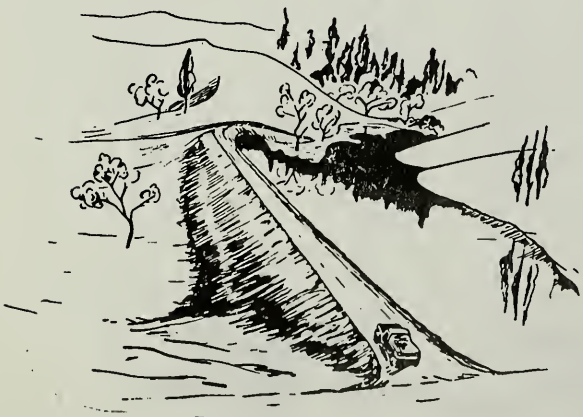
The improvement of inefficient irrigation water application on-farm may require an increase in technical assistance as new irrigation techniques and new crop rotations are used in an area.

Irrigation Water Development

Additional irrigation water derived either from seasonal redistribution through storage or from importation from the Green River Basin, increases the Basin total net revenue, production cost and labor requirements. Total net revenue increases to a greater extent than does the production cost. In all cases, the acreage of surface source-surface distribution systems is increased, but not without a corresponding increase in irrigation return flows. Total soil erosion generally increases, but in total the effect is insignificant. Big game habitat similarly is affected very little.

Detailed Analysis

The analysis quantifies the effects of increased water storage for seasonal redistribution, and importation of Green River Basin water. Neither ground water development nor irrigation water delivery systems are discussed here. It is assumed that the water right problems involved in additional storage are solved.



Water storage alternatives involve two sets of alternative futures. These are Alternative Future V and the Watershed Storage Project Alternative Future which is part of the NED Alternative Future. In both sets, the years 1985, 2000, and 2020 are studied. The Watershed Storage Alternative Future has to do with water storage and Alternative Future V has to do with importation of water from the Green River Basin.

Increased water storage is simulated by shifting water quantities available in surplus months to water short months. Shifts are made, however, only in watershed groups that have been identified in Watershed Investigative Reports (WIR's) as having possible project potential. The following map (Figure 1-14) shows the watershed investigated in detail. Production constraints for this concern are changed to allow for possible increases in production from the redistributed seasonal water supplies.

As a basis for comparison, an analysis was made with production constraints removed, but with the original water supplies of Alternative Future I. This analysis is defined as being the maximum production base.

Three analyses were made within the maximum production base assumption. The first analysis included watersheds only in the North Platte Court Decree Area (Inside Decree Area); the second analysis included watersheds outside the North Platte Court Decree Area (Outside Decree Area); and the third analysis included all watershed projects in the Basin (Total Basin).

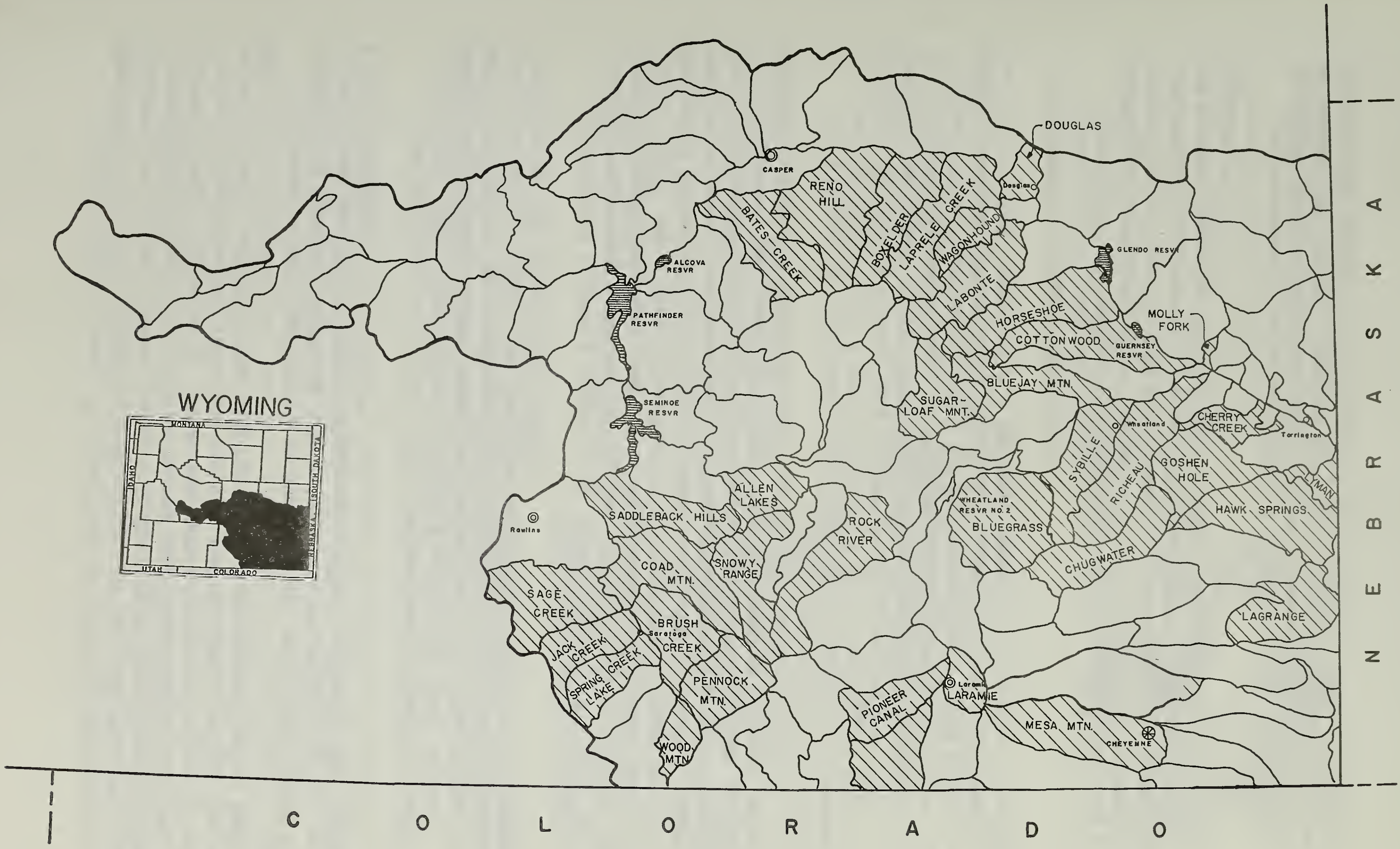
Alternative Future V consists of three analyses designed to simulate increases in water import from the Green River Basin. The current amounts of water used in irrigation directly from the North Platte River and derived from Main Stem reservoir storage are increased 50 percent, 100 percent and an unlimited amount. Water supply increases are made only in those watershed groups currently having irrigation from reservoir supplies or directly from the North Platte River. The production levels in Alternative Future V are constrained to the OBERS E' levels as in Alternative Future I.

The effects of increased water supplies on selected parameters is shown graphically on Figures 1-15 to 1-20. The graphs are designed to show magnitude and direction of change rather than absolute values. In the watershed project evaluation results, the maximum production base is defined as the index base and is equal to 1.0 for each year. In the Green River Basin water import results, Alternative Future I is the base for comparison and has an index value of 1.0 for each year.

Watershed Storage Evaluation

The effect of increasing irrigation water supplies through storage of seasonal surpluses is an increase in total Basin net revenue, production costs and labor requirements. Results indicate that the additional crop production from increased water supplies increase total net revenue twice as much as the increase in production cost and labor requirements.

Increased water supplies create a corresponding increase in total irrigated acres. Increase in irrigated acreage averages about 21 percent in the Basin. Acreage irrigated from a surface source-surface distribution systems increase about 42 percent. Acreage irrigated from



WATERSHED INVESTIGATION REPORTS

PLATTE RIVER BASIN

Figure 1-14

surface source-sprinkler systems increases about 20 percent. Areas that raise predominately native hay show no increase in the use of sprinkler irrigation systems.

Corresponding to the increase in irrigated acres is an increase in the irrigation return flows. However, total soil erosion and the acreage with soil erosion rates greater than 0.5 ton per acre per year does not increase appreciably.

Crop production remains nearly constant for the area inside the North Platte Decree Area boundary. In the area outside the boundary of the North Platte Decree Area production increases for alfalfa hay, barley, corn grain, corn silage, dry beans, oats, native hay-pasture, sugar beets, potatoes, and livestock required AUM's from rangeland are all less than five percent.

The acreage converted to irrigation from both dry cropland and rangeland increased in all three time periods. The three-year averages for the Basin is 43 percent.

The effect of the additional irrigation water supplies on big game habitat is negligible. The acreage of rangeland converted to irrigated cropland is only a small portion of the total rangeland and thus the big game habitat is not significantly affected.

The above discussion has dealt with the effects of additional irrigation water on the Platte River Basin. Effects within and between watershed groups may be more severe than are the effects on the entire Basin. The Basin effects are less severe since a reallocation of resources and production patterns occur. Within a watershed group, changes indicated in the alternative future analysis may affect individual operators beyond their ability to survive. At the same time, production costs changes may imply changes in production inputs that the agribusiness sector is unable to support or survive.

Green River Water Import Evaluation

For this study, it was assumed that a physical potential exists to import water from the Green River Basin. This water could be used by agriculture in the Platte River Basin if the initial costs of importation were subsidized.

Assuming that no costs are included for importing water into the Basin, the analysis made by this study shows that net agricultural revenue could be increased. The total acres irrigated would increase as the additional water is imported indicating that irrigable land availability is not the most limiting constraint. Dry cropland acres tend to drop as more water is imported into the Basin.

The acreage irrigated with full and short water supplies both increase considerably at the 50 percent and 100 percent levels. The largest change occurs in the No Limit import level, where the full water supply acreage increases over two and one-half times while the short water supply acreage decreases.

As the water import levels increase, there is a trend away from sprinkler irrigation. At the same time, the surface source-surface system irrigation increases.

Corresponding to the increase in irrigated acres and especially the surface irrigation, there is an increase in the quantity of irrigation return flows.

The total amount of soil erosion and the number of acres with an annual soil loss greater than 0.5 ton per acre increases as the amount of imported water increases.

Land conversion from dry cropland and rangeland to irrigated cropland increases substantially with increased water imports.

As in the previous Watershed storage evaluation, the water import from the Green River Basin has little effect on the Basin-wide big game habitat.

Importation of Green River Basin water has many obstacles to clear such as water rights and project feasibility.

NED-EQ Ramifications

The NED ramifications of seasonal redistribution of irrigation water through storage and of increased irrigation water supplies through importation from the Green River Basin are greater than the EQ ramifications. The increase in total net revenue, however, is less than seven percent in all cases except when there is no limit on water import from the Green River Basin. Then the net revenue increases about 30 percent. Increases in total production cost and labor man-hours are less than the net revenue changes.

The EQ ramifications, as reflected in wildlife habitat indices and the amount of soil erosion at annual rates of greater than 0.5 ton per acre per year, are insignificant. The quantity of return flow does increase significantly in both sets of analysis in almost direct proportion to the expanded acreage of surface source-surface system irrigation. Consequently, the effect may be detrimental to the zero discharge concerns and related water quality aspects.

The NED and EQ ramifications discussed above are for the entire Platte River Basin. Effects on individual watershed group areas may be more beneficial or detrimental than the Basinwide effects.

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN ADDITIONAL IRRIGATION WATER STORAGE PROJECTS AND SELECTED ITEMS, YEARS 1985, 2000, AND 2020. THIS SAME RELATIONSHIP IN THE MAXIMUM AGRICULTURAL PRODUCTION BASE IS THE BASIS FOR COMPARISON.

IRRIGATION WATER DEVELOPMENT STORAGE PROJECTS

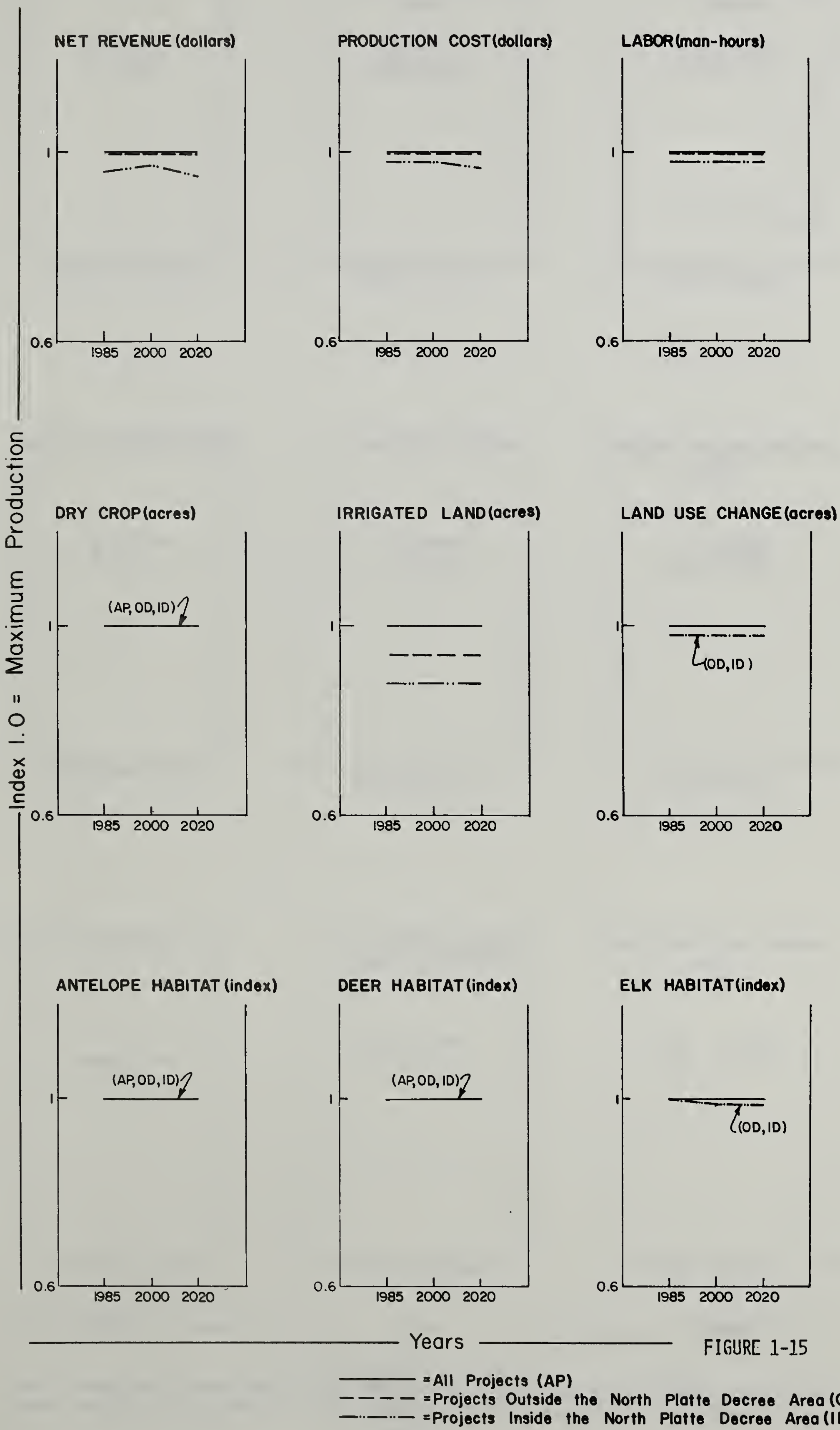


FIGURE 1-15

IRRIGATION WATER DEVELOPMENT
STORAGE PROJECTS

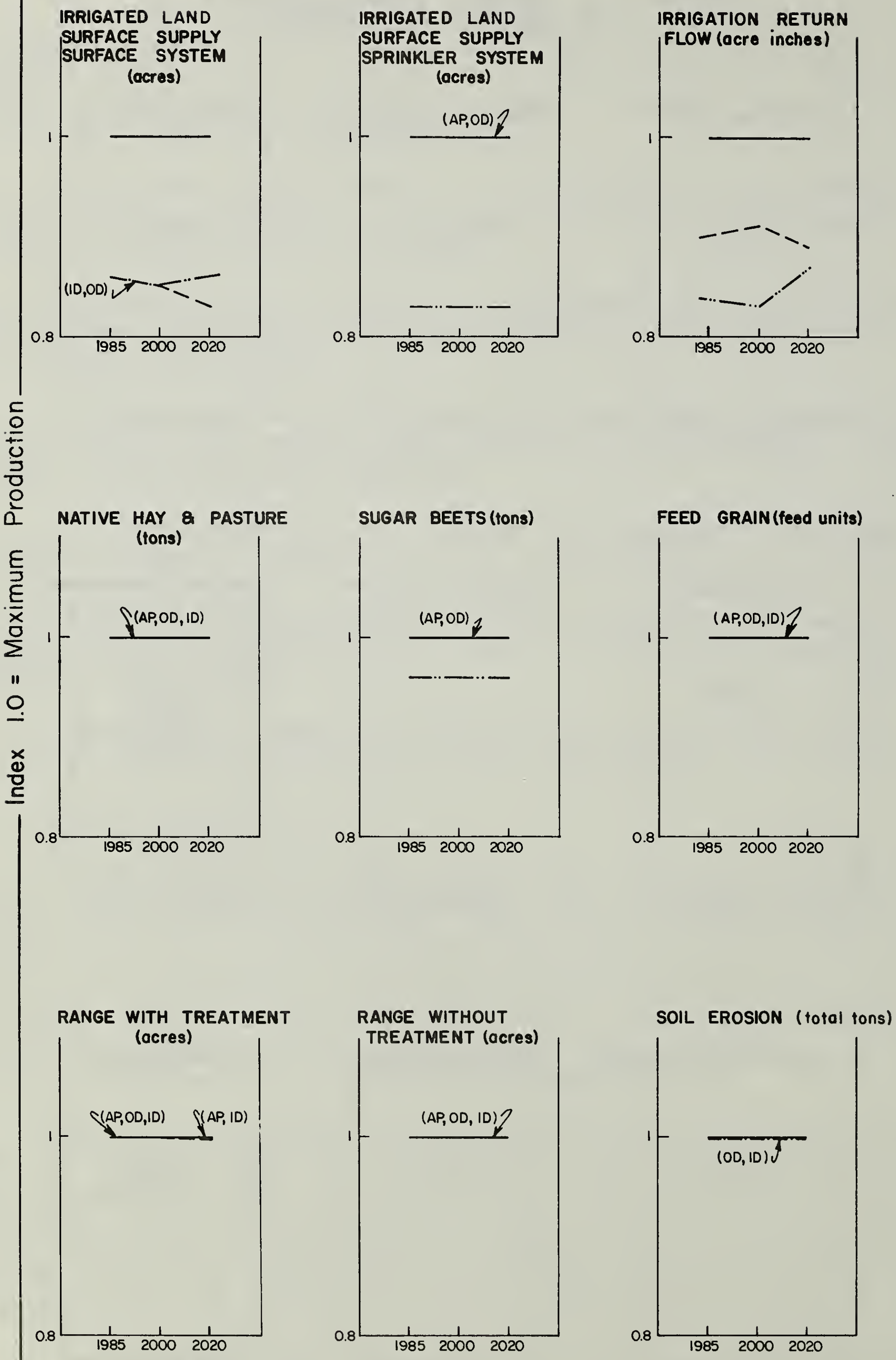


FIGURE 1-16

——— =All Projects (AP)
– – – – =Projects Outside the North Platte Decree Area
—··—··— =Projects Inside the North Platte Decree Area

IRRIGATION WATER DEVELOPMENT
STORAGE PROJECTS

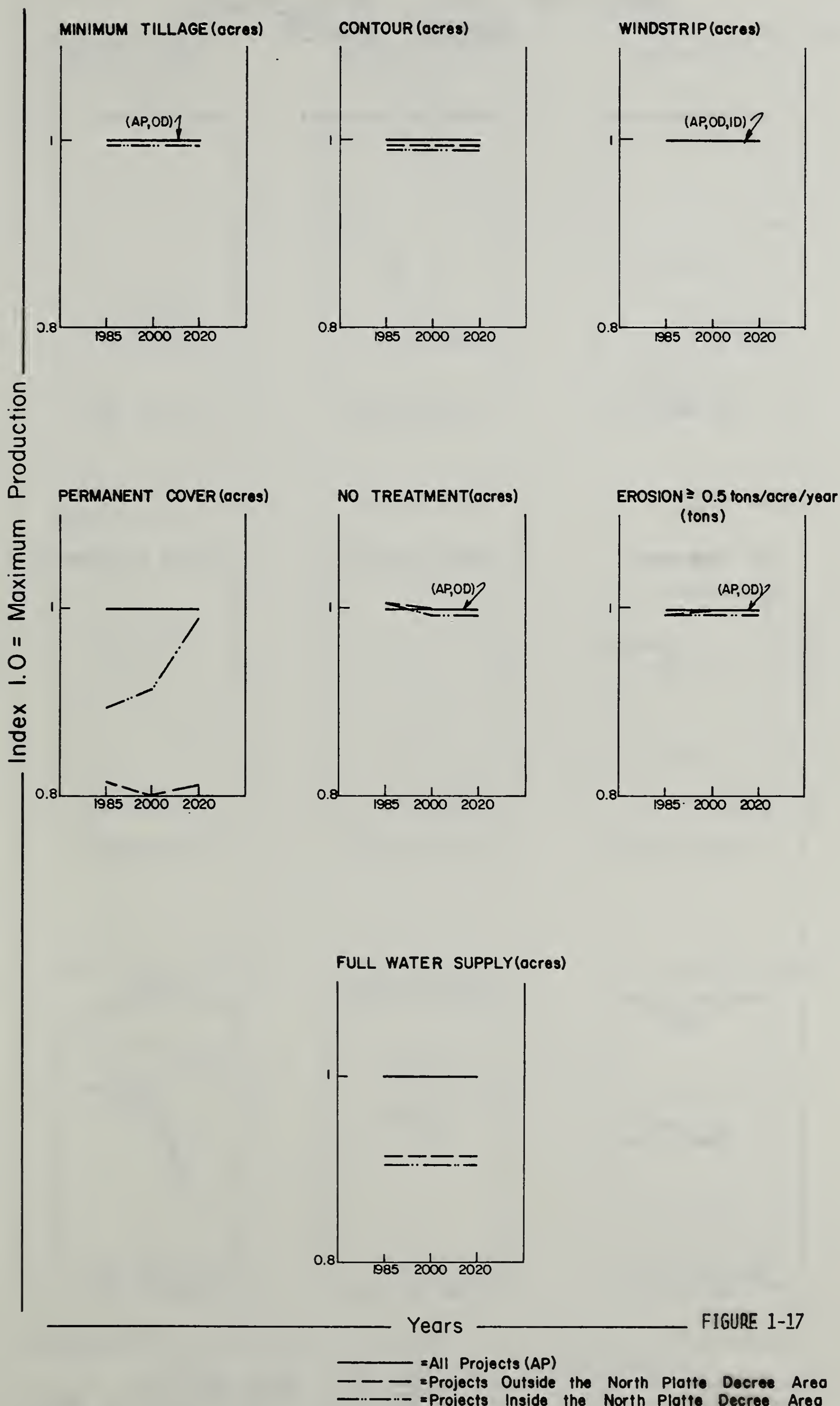


FIGURE 1-17

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN IMPORTING WATER FOR AGRICULTURAL PURPOSES AND SELECTED ITEMS, YEARS 1985, 2000, AND 2020. THIS SAME RELATIONSHIP IN THE BASELINE ALTERNATIVE IS USED AS A BASIS FOR COMPARISON.

IRRIGATION WATER DEVELOPMENT
IMPORT WATER

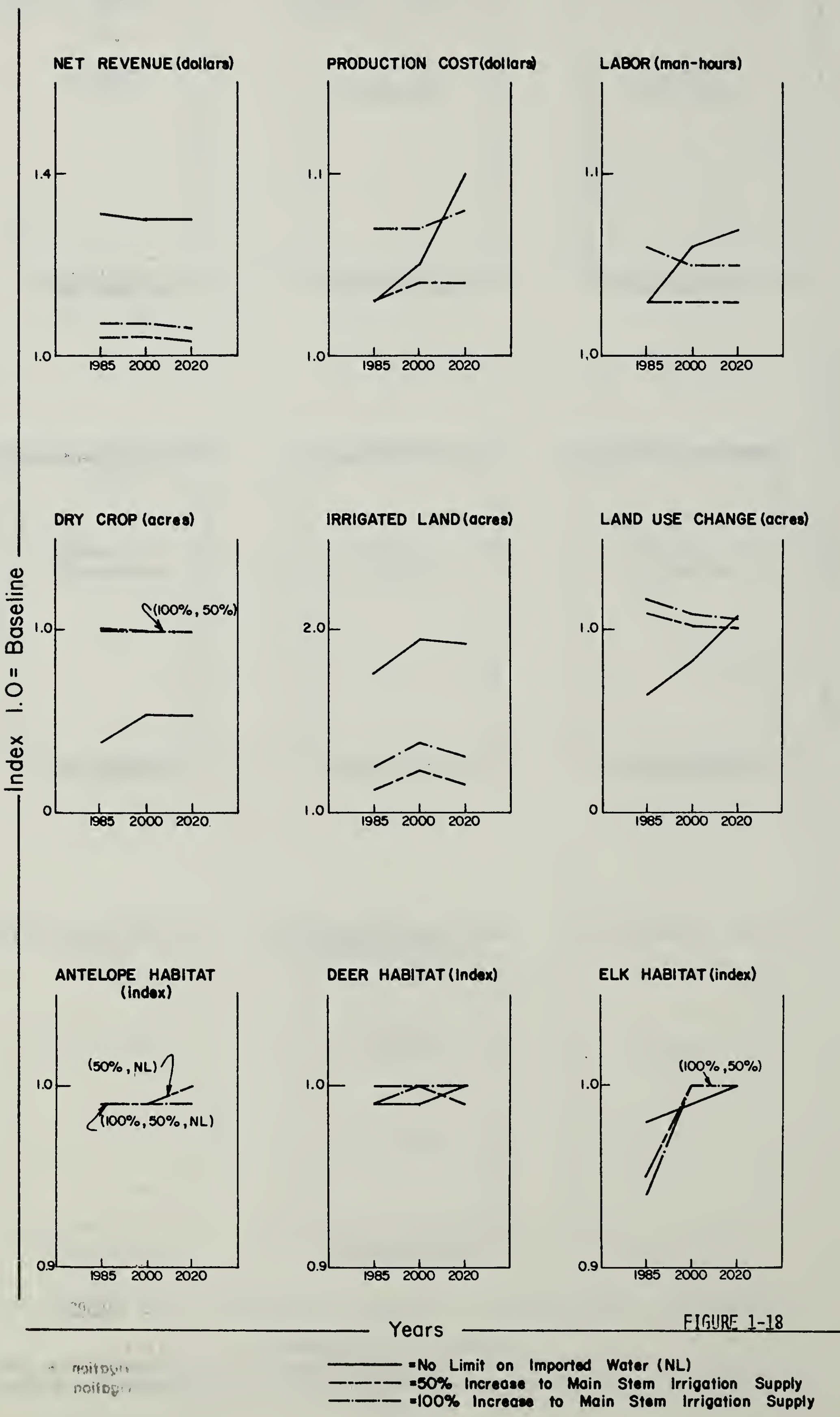


FIGURE 1-18

IRRIGATION WATER DEVELOPMENT
IMPORT WATER

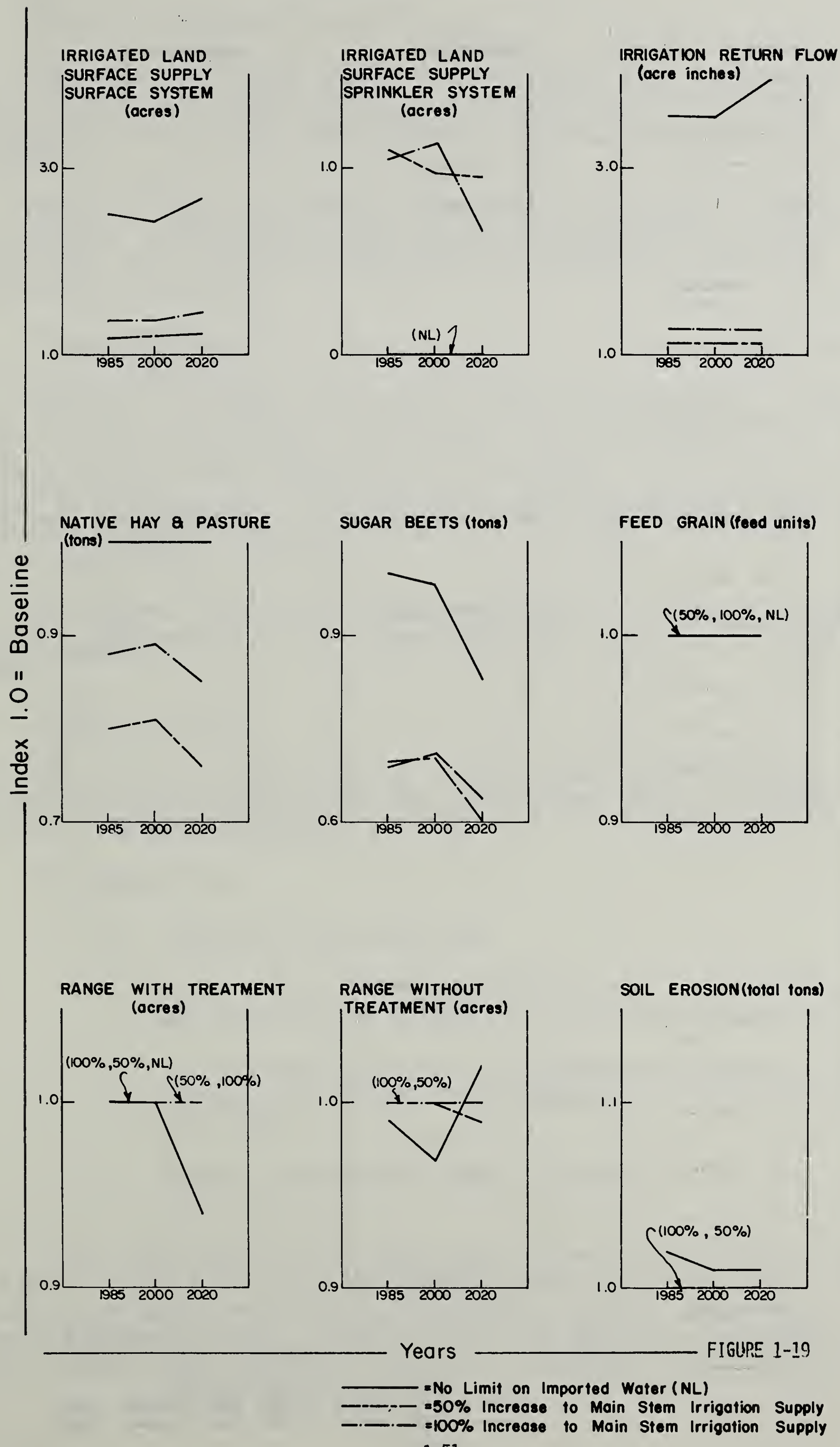


FIGURE 1-19

IRRIGATION WATER DEVELOPMENT
IMPORT WATER

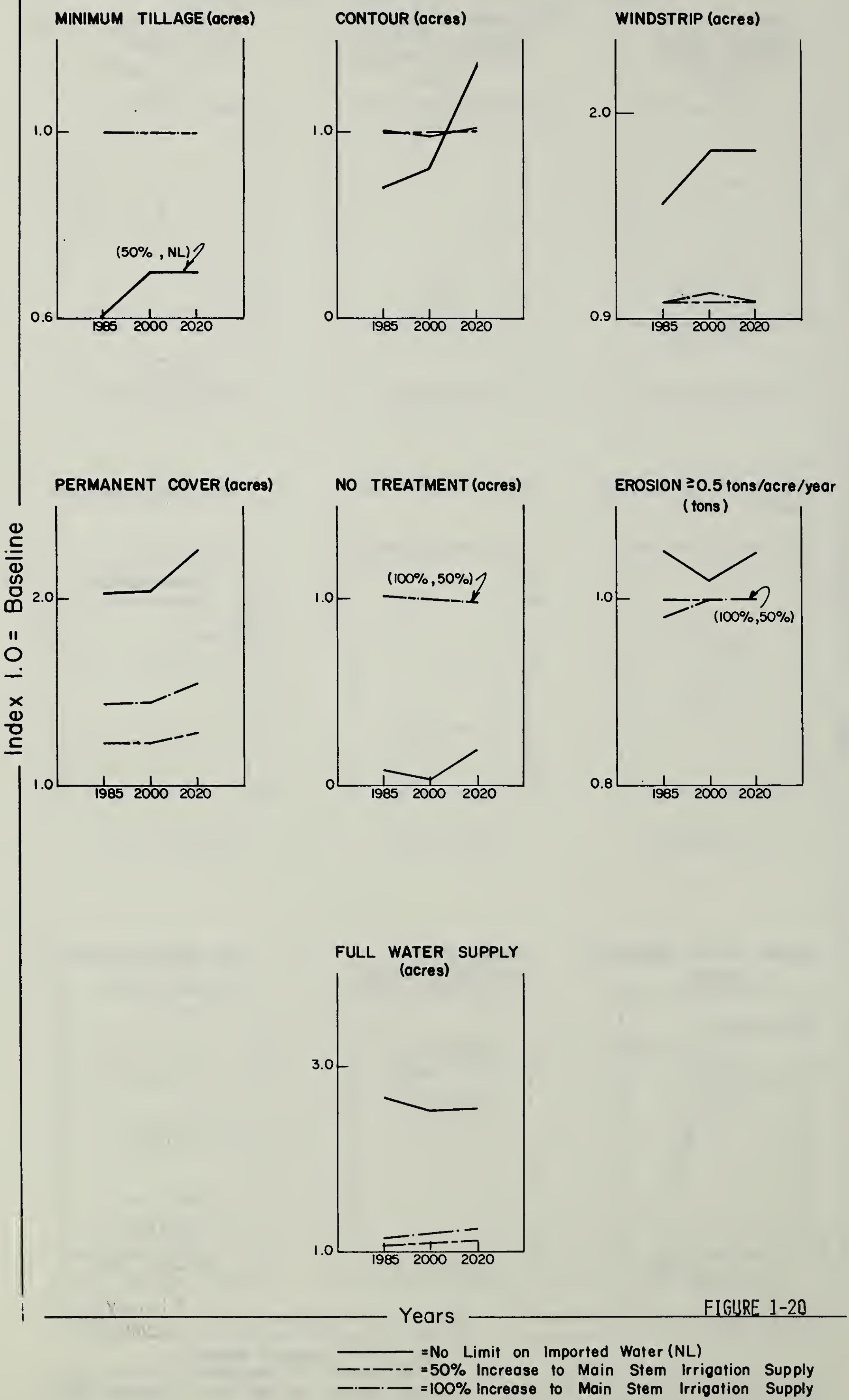


FIGURE 1-20

Project or Program Possibility

The watershed project evaluation indicates, that net revenue and crop production are expanded by a redistribution of seasonal water supplies. Similar results occur as Green River water is imported.

However, in both instances a more detailed analysis is needed to determine the respective feasibilities. Transferring of Green River Basin water into the Platte Basin is beyond the scope of present USDA programs.

Flood Protection

Damages from floods, with certain specific exceptions, is not a major concern in the Basin. One hundred and thirty-four watersheds were evaluated within the Basin and only five were identified as needing detailed flood protection investigations. Of the five, two appear to be economically feasible to implement under the provisions of Public Law-566 - Small Watershed Act. The other three appear to be not economically feasible.

Any project that involves water storage would reduce downstream flooding. The effect in most cases would be a reduction in flood damage.

Detailed Analysis

The alternative future for this concern was structured and analyzed using existing reports and information. Basic information used was from several sources.

The sources are:

1. Watershed screening data.

2. Wyoming Water Planning Program Report No. 9, "Water and Related Land Resources of the Platte River Basin."

3. The Missouri River Basin Comprehensive Framework Study, "Needs and Problems Platte-Niobrara Rivers Subbasin." June 1967.

4. Wyoming Conservation Needs Inventory - June 1970.

Floods experienced on the main stem and major tributaries of the North Platte River, usually differ materially from floods occurring on small tributaries and headwater creeks. These main stem and major tributary floods usually rise and fall slowly and often inundate the floodplains for several days and in some cases

have been as long as two weeks. These floods usually involve large contributing areas and great volumes of water and do not necessarily involve extremely high rates of runoff from any given local area.

Floods in upstream areas are caused by a variety of events. Chief among them are the floods resulting from intensive rains of the summer thunderstorm type, often referred to as "flash floods". Floods of this type cause a major proportion of the flood damages along the small tributaries in the Basin. Valley slopes in most of the tributaries are usually steep, resulting in high velocities at fairly shallow flow depth. The period of inundation is usually short, but the high velocity flows cause scouring to occur to the floodplain.

Floodwater losses vary widely, both in magnitude and frequency, depending on land use, topography, and extent of development. Stored grain, haystacks, and crops in various stages of growth are subject to damage. Losses occur from reduced yields, poorer quality, increased tillage and weed control, and increased production and harvesting costs.

Irrigated lands located outside or above the floodplain are also subject to flood damages. These lands are usually served by canals that are subject to damage from flows originating from land above them. When runoff from lands above the canal reach the gently sloping to level irrigated areas, they spread out and inundate a considerable area, often breaking irrigation canals, adding to the flood volume. Irrigation canals and ditches can be filled with sediment and debris. Structures such as drops, turnouts, and siphons are often left inoperative. Sediment and debris depositions on the irrigated fields interfere with irrigation, smothers low, young crops, and sometimes requires the releveling of fields. If a canal break occurs near the head of the system, the entire irrigated acreage below the point of the break is endangered.

Other agricultural damages includes floodwater and sediment damage to farmsteads, fences, harvested crops, machinery, and livestock losses. Fence damage not only includes the replacement cost and labor, but also the expense of recovering the strayed animals and the damage done by them to crops.

Flood damages to roads are usually greater on county and local roads than on the better designed state and federal highways. County bridges, as a rule are not designed to withstand large floods. Also, due to limited funds and personnel, their repair is frequently delayed or limited. Bridge damage is unusually high in areas with degrading channels. Here, floodwaters are continually deepening and widening the stream channels, thereby undermining bridge approaches and supports. Damages to bridges, culverts, and roadbed fills are the most frequent types of damage to railroad facilities.

Losses occur in urban areas as a result of inundation of, and sediment and debris damage to, homes, public buildings, utilities, and commercial and industrial businesses located on the flood plain.

Flood damage, with certain specific exceptions, is not a major concern in the Basin. With the high storage control on the North Platte River, the flood damage potential along the main stem is rather minor. However, there is a possibility that a major flood in the North Platte River could cause flooding damages in Saratoga, Casper, Glenrock, Douglas, and Torrington, even with this control. The majority of the main stem reservoirs were constructed without specific flood control space. Only Glendo Reservoir has planned flood control space. Tributaries have in the past caused the most flood damages. Tributaries which are especially susceptible to flooding are Horse, LaBonte, Wagonhound, Horseshoe, Box Elder, LaPrele and Deer Creeks.

The 1970 Conservation Needs Inventory (CNI) compiled by the Soil Conservation Service, identified about 118,000 acres of agricultural land that is flooded periodically. Some of this flooding, particularly in the mountain meadow areas of the Basin, is considered beneficial. Urban flooding was tabulated as affecting about 1,300 acres. The urban areas identified were parts of Casper, Glenrock, Glendo, Yoder, Laramie, Chugwater, Lusk, and Cheyenne. The CNI also identified nearly 490,000 acres that have erosion damage. Erosion damage is defined as land which has been damaged by gully and streambank erosion. This damage is to range, crop and urban lands. Of the 490,000 acres, nearly 132,000 acres or about 27 percent is considered geologic erosion.

The Missouri River Basin Report shows that the average annual flood damages are estimated to be $608,000 (1968 Price Levels). Damages were updated to a 1975 base period so that average annual damages are estimated to be $670,000. This includes $187,000 for urban damage and $483,000 crop and pasture damage. Urban damages were updated using the Personal Consumption Expenditure Index of the U. S. Department of Commerce, Bureau of Economic Analysis. Agricultural damages were updated using the index of Prices Received by Farmers, Agriculture Statistics, 1978.

The Basin was analyzed watershed by watershed to specifically identify flood damage concerns. Of the 134 watersheds screened only five were identified as needing flood damage reduction investigation. These investigations were carried out and are published in the Watershed Investigation Reports Working Paper. There are 27 Watershed Investigation Reports (WIR) included in the working paper. Four urban areas - Glenrock, Laramie, Douglas, and Cheyenne - were included in WIR's. The remaining flood related WIR evaluated flood damage reduction to crop and rangeland.

The other 22 WIR's are mainly concerned with agricultural water management and supplementing existing irrigation water supplies. Although reduction in flood damages was not specifically analyzed, any project that entails water storage would undoubtably have an effect on downstream flooding. The effect would be a reduction in flood damage.

NED-EQ Ramifications

Both the NED and EQ ramifications of reducing flood damages and providing flood protection are favorable. Any time flood losses are reduced, economic benefits can be expected to rise. Environmental effects are also expected to rise whenever flood damage is reduced. This is a result of reduction of streambank erosion, land erosion, sediment being delivered to waterways and lakes, and the land being able to produce more forage and cover for wildlife.

Project or Program Possibility

Existing USDA programs are available to assist landowners in implementing projects to reduce flood damage. The five WIR's that evaluated flood damage reduction indicate that two of these appear to be economically feasible to implement under the provisions of Public Law 566 - Small Watersheds Act. The remaining appear to be not economically feasible.

Zero Discharge

The effect on patterns of agricultural water use by eliminating irrigation return flow varies according to production level assumption. With no limit on production of any crop, forcing the return flows of irrigation water to zero has almost no effect on economic or production parameters in the Platte Basin. However, under the assumption of a production constraint on each crop such as OBERS, the effect on several parameters is significant. Total net revenue, production cost, and man-hours of labor decline as return flows approach zero. Acreage of native hay and pasture is reduced sharply as surface distribution systems are replaced by sprinklers. In both the constrained and unconstrained production levels, big game habitat and soil erosion levels are not affected.

Detailed Analysis

The following assumptions are made with respect to the concern. Zero discharge of non-source pollutants is defined to be zero discharge of return flows from irrigation into streams. Sprinkler systems are assumed to have no return flow and reflect the investment (defined as both capital and labor) a landowner would need to make to achieve no return flows of irrigation water. Sprinkler systems are assumed to be applicable on all irrigated lands. These assumptions significantly effect the analysis since there may be more economical alternatives for eliminating return flows. The effects on stream flows, ground water recharge, downstream irrigators, and required off-farm distribution systems are not measured.

Results of Alternative Futures I, II, and IV are used to analyze this concern. Four analyses were made for each time period. The four key on the total quantity of return flow of irrigation water allowed. This quantity is constrained at four levels - no reduction in return flow; 50 percent reduction in return flows; 75 percent reduction in

return flows; and 100 percent reduction of return flows. The no reduction in return flow level is the quantity of return flow in Alternative Future I. The other reductions are then increments of the no reduction in return flow and make up Alternative Future II and IV. Alternative Future II has crop production constrained to OBERS levels, while in Future IV the crop production levels are not constrained, and the Basin is allowed to produce the mix of crops which is most economically optimal. The crop prices used in Alternative Future II and Alternative Future IV are not identical. In Alternative Future II, Water Resource Council Prices are used while in Alternative Future IV, the State of Wyoming prices averaged for the years 1972-1976 are used. Consequently, differences in results between the two alternative futures may be due to either the price changes 1/ or the production constraint changes.

The effects of the alternative futures on selected parameters are shown graphically on Figures 1-21 to 1-28. The graphs are designed to show magnitude and direction of change rather than absolute values, thus, indices are graphed with the no reduction in return flow level equal to 1.0.

Elimination of irrigation return flows has a greater impact in the constrained production of Alternative Future II than in the unconstrained production of Alternative Future IV. Many of the parameters in Alternative Future II are reduced about 10 percent as return flows approach zero but in Alternative Future IV most of the parameters have a change of less than one percent. Even in Alternative Future II, little change occurs until return flow is reduced below the 50 percent reduction level.

The Alternative Future IV shows smaller changes since the acreage of dry cropland is six times greater (3,100,000 acres versus 494,600 acres) than in Alternative Future II. Thus, a larger share of total net revenue is derived from the dryland crop production which is not affected directly by the incremental reduction in irrigation return flows.

The absence of a production constraint as in Alternative Future IV allows for a greater substitution of crops grown on a given land area. Consequently, net revenue can remain nearly constant.

The effect of reducing return flows on the irrigated cropland, of course, is to shift from surface distribution systems to sprinkler systems. The acreage of surface system irrigation declines to zero

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1/ The two sets of prices are shown in Table 1-9, page 1-34, Basic Land Relationships Working Paper.

while the acreage of sprinkler irrigation from surface water sources increases in Alternative Future II. There is no change in the sprinkler system acreage in Alternative Future IV. The acreage of sprinkler irrigation in Alternative Future II from the ground water sources declines in all three time frames.

The acreage of ground water source cannot increase as return flows approach zero since ground water is already fully used.

The total acreage of irrigated land also declines as the shift is made toward a zero return flow situation. Again, Alternative Future II has a greater decline than Alternative Future IV. Alternative Future II declines by a total of 115,000 acres (44%) in year 1985, by a total of 105,000 acres (42%) in year 2000 and by a total of 74,000 acres (28%) in year 2020. Alternative Future IV declines by a total of 46,000 acres (18%), 29,000 acres (12%), and 27,000 acres (11%) in the same three respective time periods. The decline in irrigated acres relates to a similar decline in acreage of irrigated native hay. Native hay apparently is economical to produce only under surface distribution systems. As surface distribution systems are forced out, the land goes out of production. Another factor adding to this idling of land is the absence of many alternative crop possibilities in the areas where continuous irrigated native hay is grown.

In Alternative Future II net revenue, production cost, and man-hours of labor decline with return flows approaching zero. Production cost decline the least since sprinkler systems replacing the surface systems have higher cost per acre.

Because of the high cost per acre of reducing irrigation return flows native hay and pasture are the crops most affected. Under Alternative Future II, production drops 47 percent in 1985 while under Alternative Future IV the production drops 70 percent as return flows approach zero. Oats production remains constant in Alternative Future II while in Alternative Future IV it decreases about two percent. Sugar beets and corn silage production in Alternative Future II generally increase as return flow is reduced, but their production remains constant in Alternative Future IV. Both of these crops are produced at levels below the projected goal levels in all situations analyzed. The decline in oats and native hay-pasture production apparently frees up some land and water resources for the sugar beets and corn silage. Since much of the acreages of sugar beets are controlled by the refiner, the option of increasing acreage may not be available to the producer.

Reduction of return flows from irrigation has no effect on big game habitat. The big game habitat indices are assumed to fall within the scope of environmental quality. The indices are only associated directly with the rangeland activities and, consequently, range activities would have to change considerably to cause a change in the gross index values for the Basin.

The above discussion has been concerned mainly with the effects for the Basin as a whole. Within certain areas or watershed groups of the Basin, the effects may be quite severe. For example, in Alternative Futures I and II, year 2000, the amount of idle or non-producing irrigated land in watershed groups 1 through 13 is 58 percent greater as return flows approach zero than at the no reduction in return flow level.

NED-EQ Ramifications

NED ramifications of enforcing a zero discharge of irrigation return flows are much greater than the EQ ramifications. The total net revenue of the Basin decreases more than 10 percent in Alternative Future II, while in Alternative Future IV, net revenue decreases less than 0.7 percent. The change in labor man-hours is almost identical to the changes in net revenue.

The production levels of Alternative IV differ significantly from the baseline projected production levels for most of the crops. For example, in the year 2000, the production level results of Alternative IV compared to the baseline production levels provides the following relationships: alfalfa hay - 13 times greater; barley - 20 times greater; corn grain - 11 times less; corn silage - 2 times greater; dry beans - 6 times greater; oats - 10 times greater; native hay and pasture - 10 times less; potatoes - 10 times greater; sugar beets - 2 times greater; while livestock grazing and wheat and rye show no change. Production at the levels greatly exceeding the baseline may have effects on the selling prices at both the national and regional level depending on the respective sensitivity of prices to varying production levels. Thus the prices assumed should not be expected to remain constant at the varying production levels as is assumed here. Price effects are considered in the OBERS projections. If the crop prices change, the net returns change (assuming constant production cost) and consequently the results would be expected to change.

The impact of the production levels is not as great for the feed grains and hay crops since substitutions in rations can be made. However, the price effects would be greater on the other generally cash crops such as dry beans, potatoes, sugar beets, and winter wheat. The expanded production levels would also strain the local marketing and agribusiness sectors.

The EQ ramifications, as reflected in wildlife habitat indices and the amount of soil erosion at annual rates of greater than 0.5 ton per acre per year, are insigificant.

Project or Program Possibility

There may be justification for compensation payments to cover lost income to the Basin. These payments would be greater in some areas of the Basin than in others. Improved irrigation management practices using surface distribution systems rather than sprinkler systems may be a more feasible method of reducing return flows for some types of soil or crops grown.

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN SPECIFIED LEVELS OF IRRIGATION RETURN FLOW AND SELECTED ITEMS, YEARS 1985, 2000, AND 2020. THIS SAME RELATIONSHIP IN THE BASELINE ALTERNATIVE THAT HAS NO IRRIGATION RETURN FLOW REDUCTION IS THE BASIS FOR COMPARISON.

ZERO DISCHARGE

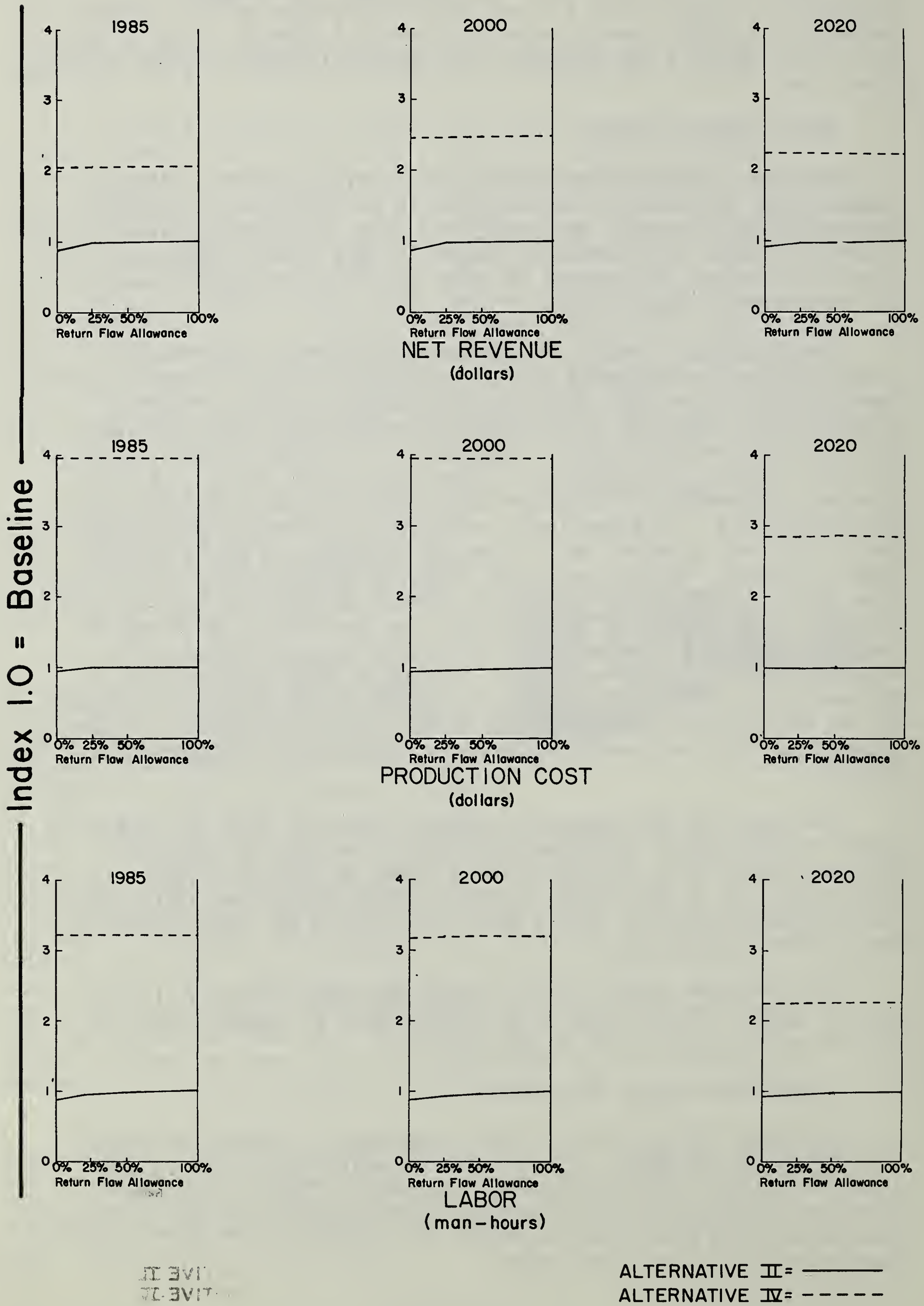


FIGURE I-21

ZERO DISCHARGE

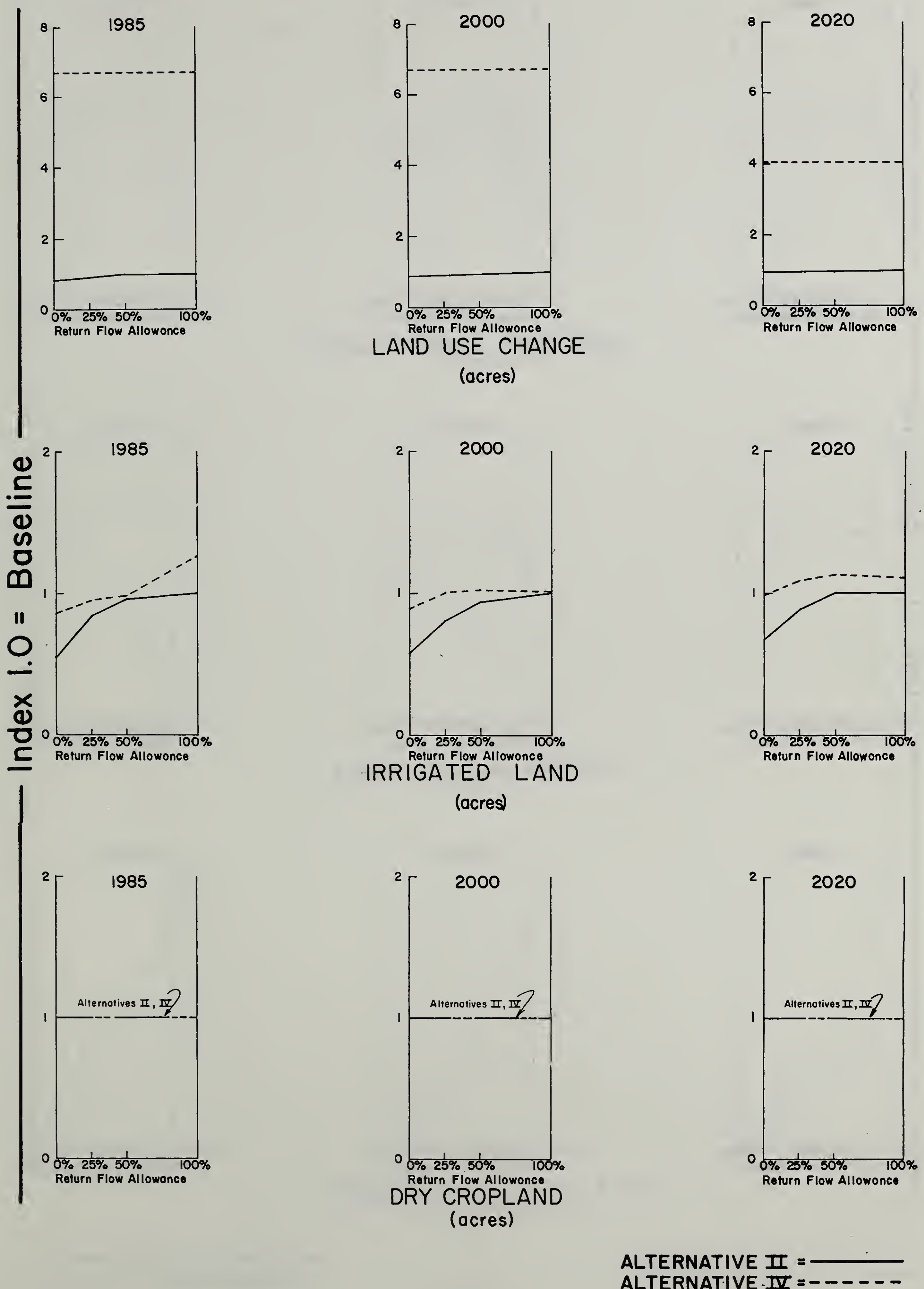


FIGURE I-22

ZERO DISCHARGE

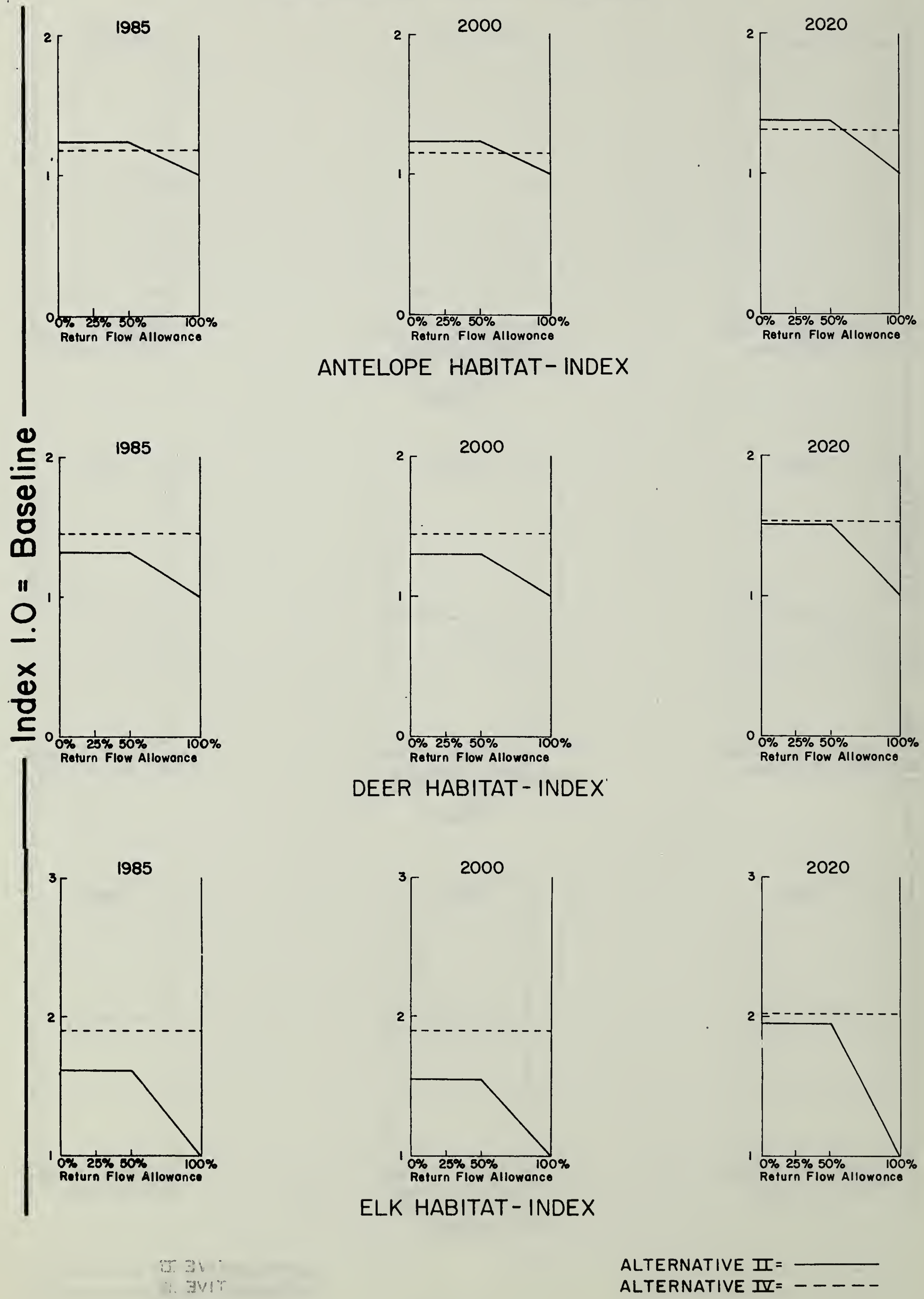


FIGURE I-23

ZERO DISCHARGE

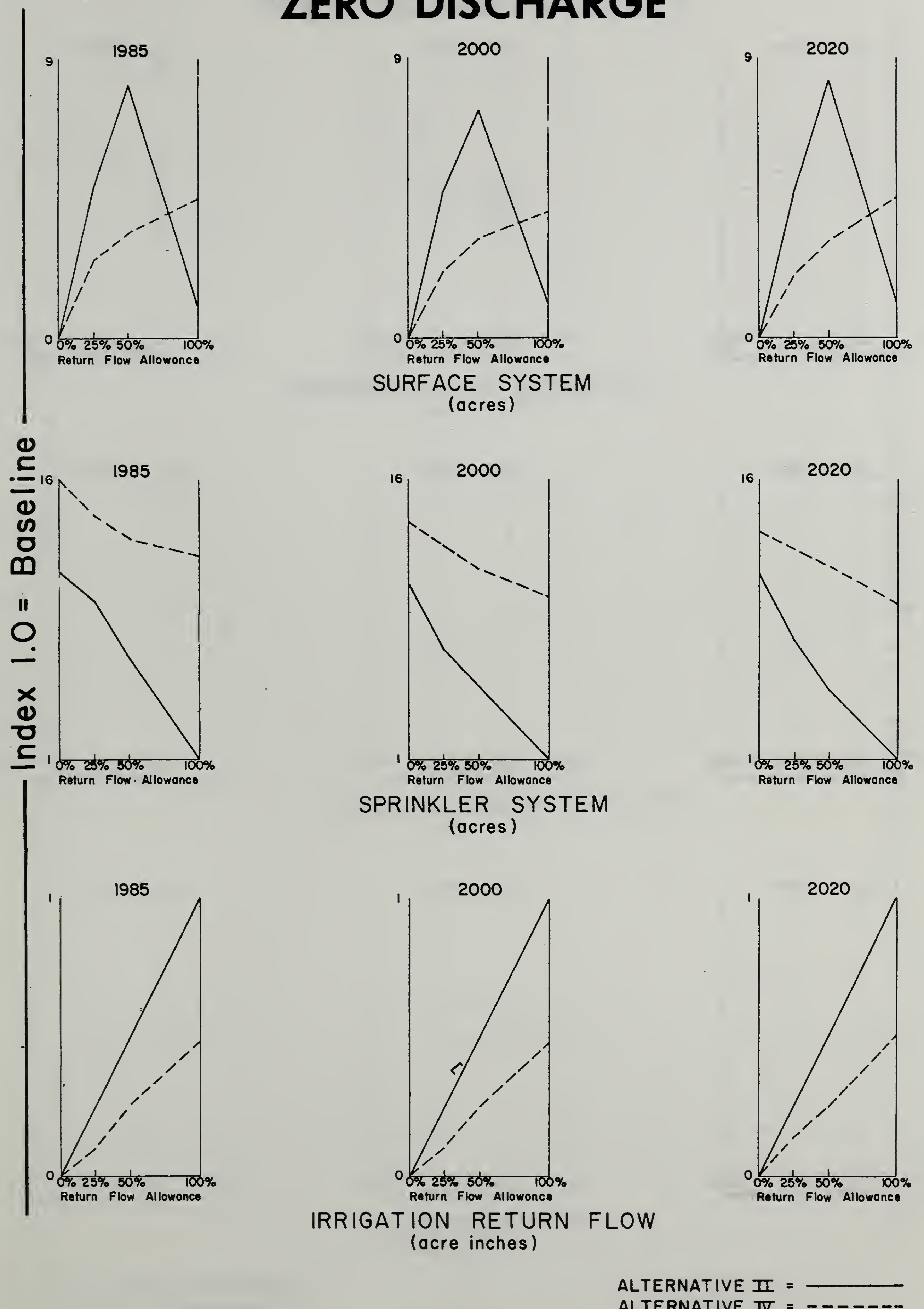


FIGURE I-24

ZERO DISCHARGE

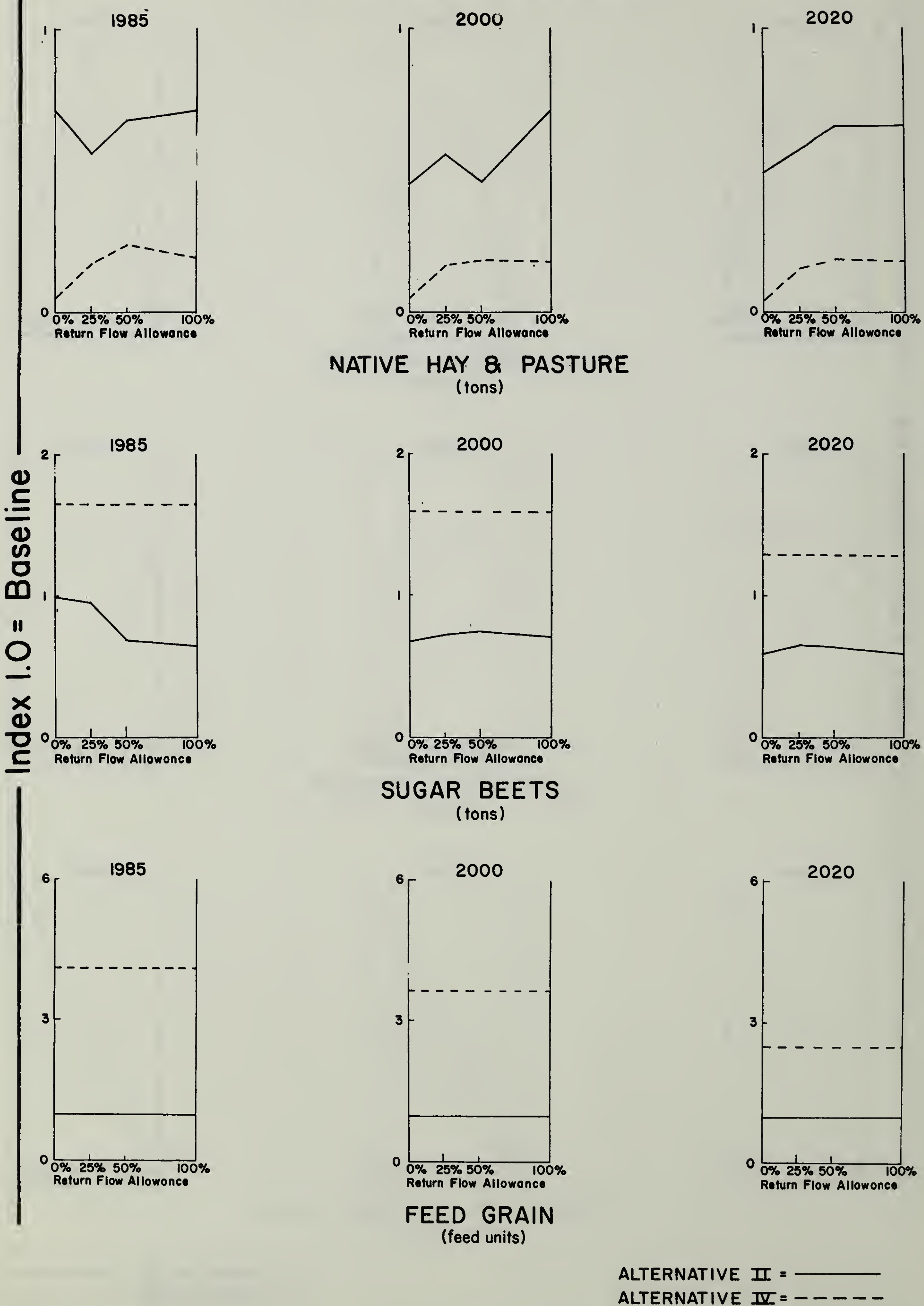


FIGURE I-25

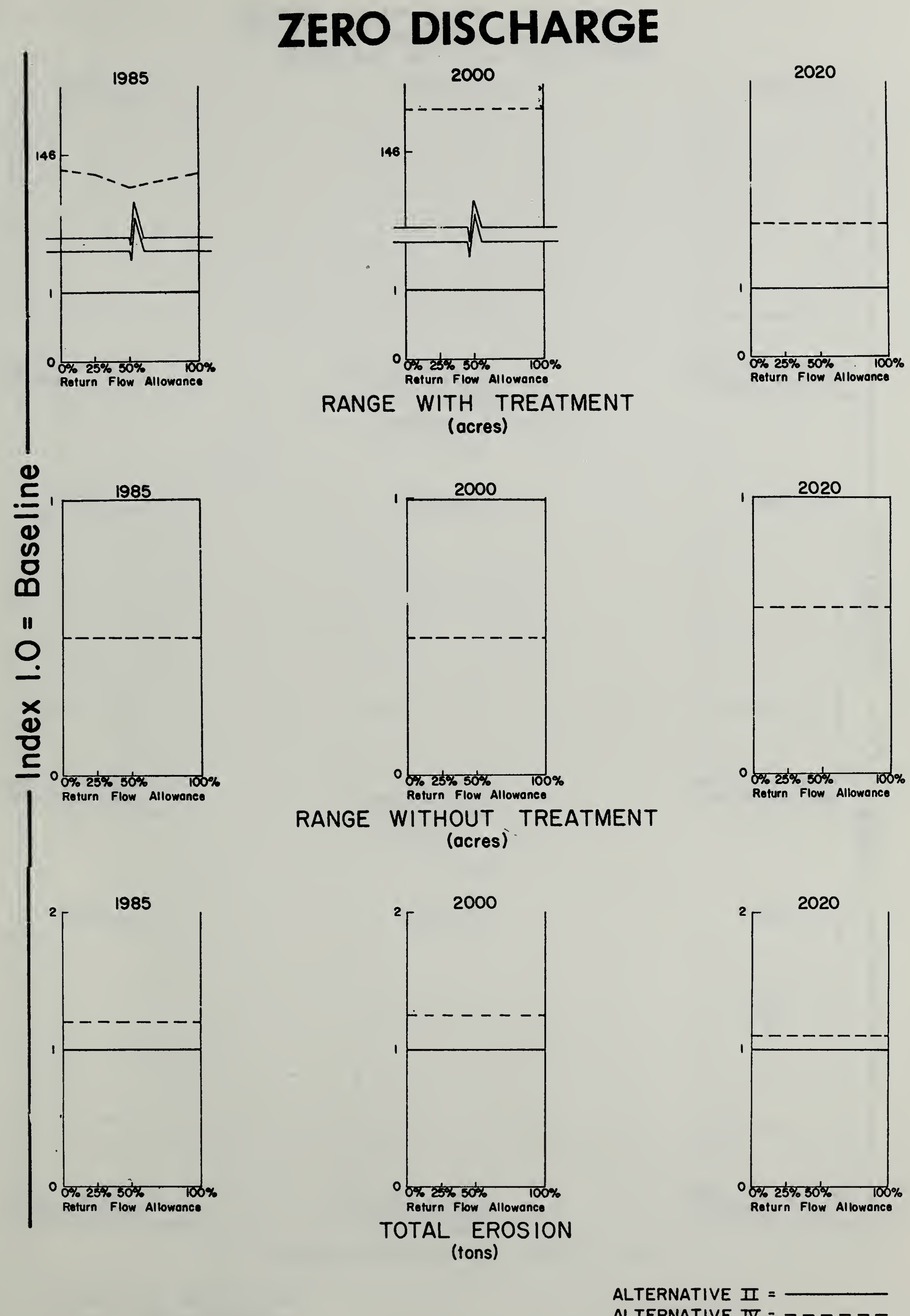

ZERO DISCHARGE
Index 1.0 = Baseline
1985
2000
2020
146
1
0
0% 25% 50% 100%
Return Flow Allowance
RANGE WITH TREATMENT
(acres)
RANGE WITHOUT TREATMENT
(acres)
2
TOTAL EROSION
(tons)
ALTERNATIVE II = ————
ALTERNATIVE IV = – – – – –

FIGURE I-26

ZERO DISCHARGE

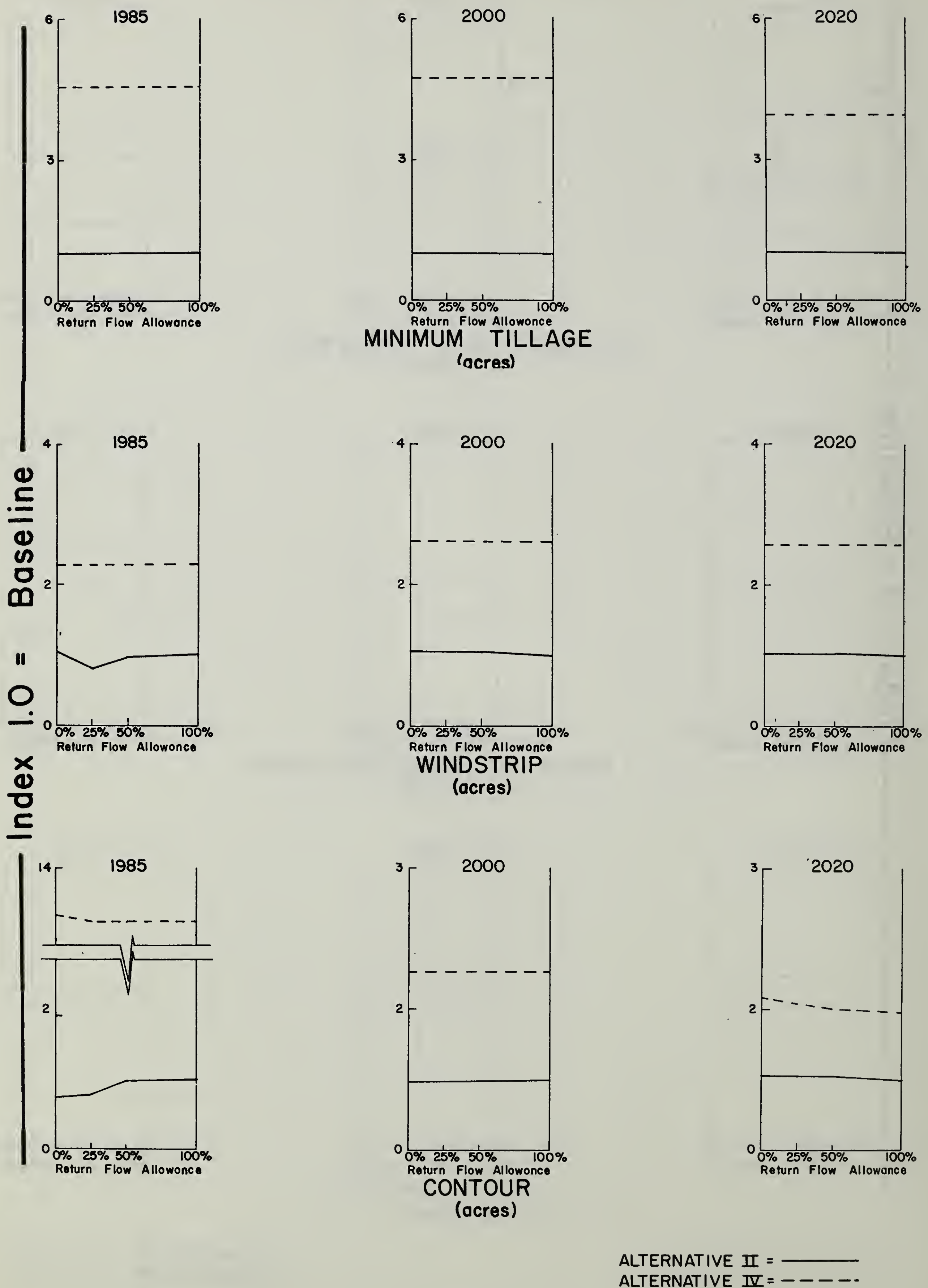


FIGURE I-27

ZERO DISCHARGE

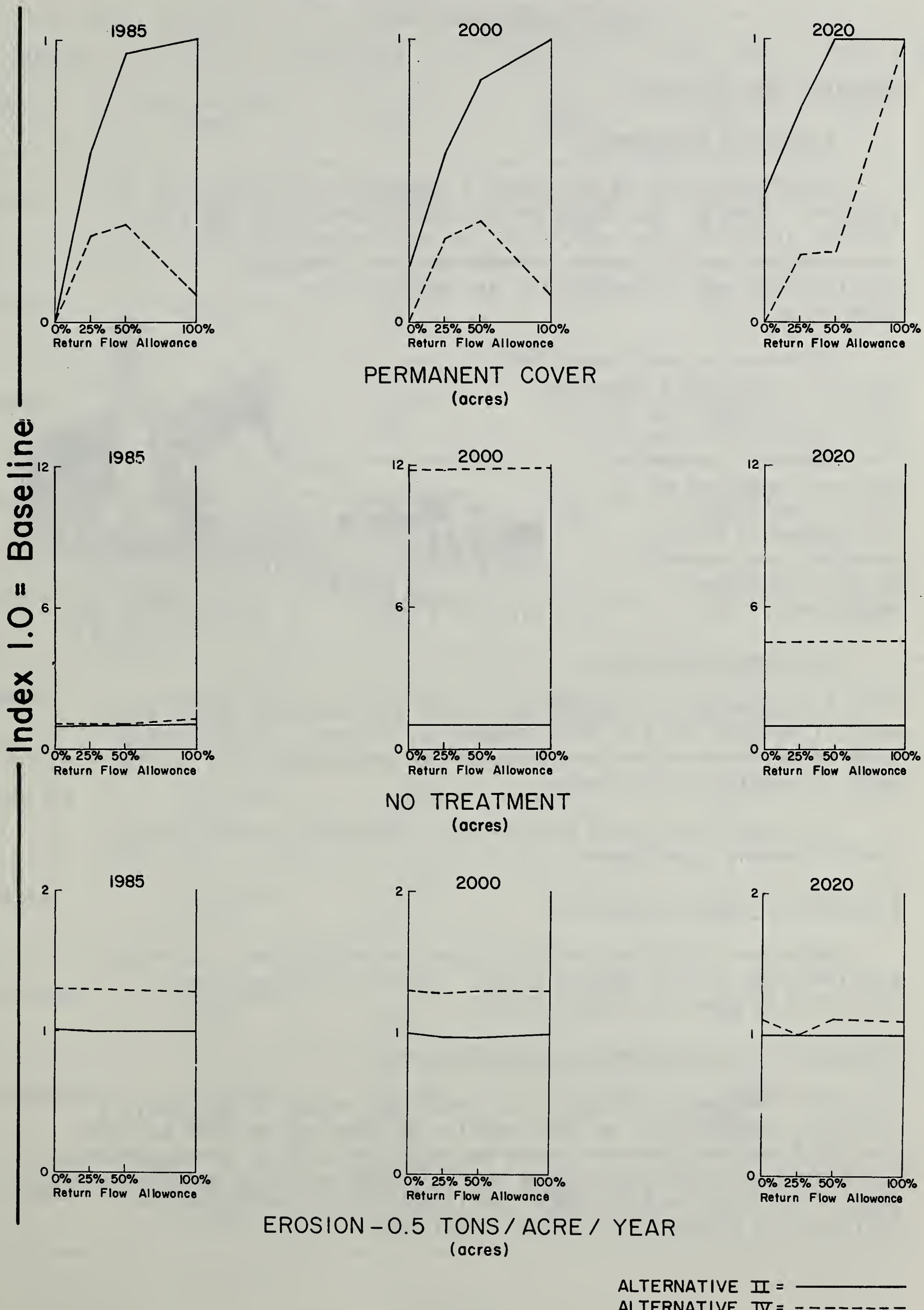


FIGURE I-28

RANGE MANAGEMENT GROUP

Problems and Concerns

Range Use Efficiency

Inefficient use of the Basin's rangeland was identified as a concern. Some of the rangeland has been overused to the point that it is now in low good, fair, or poor range condition. Other parts of the Basin's range, because of poor livestock distribution and accessibility, are hardly being used at all.

This concern was identified through a watershed screening process conducted by the Soil Conservation Service. The watershed screening process consisted of interviewing people knowledgeable of the problems and concerns within individual watersheds.

Big Game Competition

A concern was expressed that there are portions of the Basin where livestock and big game compete for forage. In some areas this competition reduces crop production and animal unit months (AUM's) available to livestock.

Big Game Competition concern was identified by the Wyoming State Planning Coordinator.

Location of the Problems

Range use efficiency and big game competition are basinwide problems that relate to each other. Table 1-13 shows range condition by counties in the Basin.

Complexity and Seriousness of the Concerns

The livestock industry is an important sector in the Basin's economy. Potentially, an improved forage base can be used by both livestock and big game in such a way that the effects of competition are minimized. Presently there are 8,223,400 acres of rangeland in poor, fair, and low good range condition, some of which can be improved and brought into better condition.

Table 1-13 Range Condition by County
Platte River Basin, Wyoming

County	Total Acres	Range Condition			
		Excellent - Ac.	Good - Ac.	Fair - Ac.	Poor - Ac.
Albany	2,126,400 100%	215,700 10%	1,456,500 68%	394,900 19%	59,300 3%
Carbon	2,716,200 100%	284,700 11%	1,694,500 62%	551,700 20%	185,300 7%
Converse	1,103,600 100%	75,900 7%	677,800 61%	345,900 31%	4,000 1%
Fremont	1,064,100 100%	50,400 5%	695,400 65%	261,100 25%	57,200 5%
Goshen	1,088,100 100%	121,100 11%	760,300 70%	204,800 19%	1,900 1%
Laramie	1,312,000 100%	180,300 14%	817,500 62%	277,800 21%	36,400 3%
Natrona	2,944,300 100%	163,500 6%	1,841,400 62%	791,600 27%	147,800 5%
Niobrara	375,800 100%	21,600 6%	272,300 72%	79,500 21%	2,400 1%
Platte	1,204,300 100%	136,500 11%	761,800 63%	301,000 25%	5,000 1%
Sublette	26,600 100%	900 3%	18,200 69%	6,400 24%	1,100 4%
Sweetwater	20,700 100%	1,000 5%	13,500 65%	5,200 25%	1,000 5%
TOTALS	13,982,100 100%	1,251,600 9%	9,009,200 64%	3,219,900 23%	501,400 4%

Analysis of Problems and Concerns

The Range Management Group of concerns has National Economic Development as their primary objective. These concerns were grouped together because of their anticipated interactions during the analysis. (See Table 1-14).

In the analysis of the concerns it was shown that there is rangeland in the Basin that is not needed for the production of livestock forage in all years except 2020. In other words, to meet projected rangeland production of AUMs, not all of the rangeland is required until the year 2020. The analysis was made for the Basin as a whole, and there may be specific cases where competition does presently exist.

The desired results are to increase agricultural output from rangeland and/or increase efficiency of range resource use, and to maintain or increase livestock production.

Ways to accomplish the desired results would include range management practices such as planned grazing systems, range seeding, brush management, rangeland renovation, proper grazing use, and structural practices such as fencing, stockwater development and distribution, and stock trails.

Public and private financing would be needed to accomplish the desired results. USDA presently has programs to assist landowners in specific structural and nonstructural measures. Some of these programs are cost-shared.

Range Use Efficiency

Improving the efficiency of rangeland use has very minor effect on the Platte River Basin parameters analyzed. Total net revenue increases slightly in the years 1985 and 2000 and slightly more in the year 2020. Total production cost, labor requirements, and production of crops remain constant except for the year 2020, when rangeland animual unit months (AUM) production for livestock increases. The total amount of soil loss and the acreage with an average annual soil loss greater than 0.5 ton per acre remain constant in the years 1985 and 2000 and decreases in the year 2020. The big game habitat indices follow a pattern of change very similar to the soil erosion parameters.

Detailed Analysis

This concern has to do with the effect or impact on the Platte Basin's agricultural economy of improved efficiency in use of rangeland.

Table 1-14 RANGE MANAGEMENT CONCERNS
Platte River Basin, Wyoming

Primary Objective	Concern	Components of Objective: 1st Level Desired Results	2nd Level Actions that can be taken	3rd Level Programs that could be used
NED	RANGE USE EFFICIENCY. (Unit of measure is Rangeland with Added Treatment. See Table 1-30 and Synopsis and Commitment Tables in Appendix B).	Increase agricultural output from rangeland and/or increase efficiency of range resource use.	Range management practices such as planned grazing systems, range seeding, brush management, rangeland, renovation, proper grazing use and structural practices such as fencing, stock-water development and distribution and stock trails.	Conservation operations, PL-566 projects, Resource Conservation and Development project measures, ACP cost-sharing, Great Plains Conservation Program, Taylor Grazing Act, National Forest Permit System, Farmers Home Admin. Programs, state and private loan programs.
NED	BIG GAME COMPETITION. (Unit of measure is Noncritical Area Big Game Use. See Table 1-30 and Synopsis and Commitment Tables in Appendix B).	Maintain or increase livestock production.	Control big game numbers, improve livestock management.	Conservation Operations, ACP cost-sharing, Great Plains Conservation Program, Resource Conservation and Development project measures, Farmers Home Admin., state control programs.

In the analysis it is assumed that an increase in rangeland use efficiency is accomplished through rangeland treatment. Thus, there are associated within all the alternative futures two management strategies which are: rangeland without treatment, and rangeland with treatment. Rangeland with treatment management strategy increases the per acre AUM yield, but with an associated higher cost and labor requirement per acre. Rangeland without or rangeland with treatment strategies will occur on a given acreage depending upon which is economically optimal while still meeting the specified total AUM requirements.

The results of Alternative Future I and a modification of Alternative Future I where only the rangeland without treatment strategy is allowed were used to analyze this concern.

Analyses were made for years 1985, 2000, and 2020. The effects of improved range efficiency are shown for selected parameters graphically on Figures 1-29 to 1-31. The graphs are designed to show magnitude and direction of change rather than absolute values. The results of Alternative Future I rangeland without treatment is defined to be equal to 1.0. Both alternative futures operate within the OBERS E Prime constrained production assumption.

The Platte Basinwide effects of improved range efficiency is minimal in the years 1985 and 2000, but is significant for some parameters in the year 2020. Total net revenue show minor increases in the first two time periods and increases slightly more in the year 2020. However, total production costs and labor required remain constant in all three time periods indicating a move toward a more economically efficient production pattern over the Basin.

The acreage of range that receives treatment is relatively small (38,000 acres) in both the years 1985 and 2000. It becomes more significant in 2020 when 3,433,000 acres of rangeland receives treatment.

The improved range efficiency does not change the acreage of rangeland conversion to other land uses in 1985 and 2000, but there is a slight increase in the year 2020. The total acreage of irrigated cropland and of dry cropland remains constant in all three future years. There is no change in the source and type of irrigation distribution system, except in the year 2020 when surface source-sprinkler irrigation acreage increases almost nine percent. In 2020, there is also a small decrease in the acreage irrigated with a full water supply and coupled with an increase in the acreage irrigated with a short or less than full season water supply.

The total tons of soil erosion decrease as does the acreage with an average annual soil erosion rate greater than 0.5 ton per acre by the year 2020. However, both of the soil erosion parameters remain constant in 1985 and 2000.

With the improved range efficiency there is no change in crop production or rangeland production for livestock, with the exception by the year 2020, corn silage and native hay-pasture each have increased slightly and sugar beet production decreases slightly. Rangeland production for livestock also increases slightly.

Big game habitat indices do not change in the years 1985 and 2000, but there is a significant decline in all four categories in the year 2020. The decreases in 2020 for antelope, deer, elk, and grouse habitat are 7 percent, 10 percent, 6 percent and 10 percent, respectively.

The above discussion relates only to Basinwide effects. Within certain areas or watershed groups, the effects may be greater while some watershed groups may not be affected at all. Within a watershed group, changes in production practices and in the associated net revenue, production cost and labor requirements may affect individual operators beyond their ability to adjust. At the same time, production cost changes may imply changes in inputs and financial needs that the agribusiness sector is unable to support or survive.

NED-EQ Ramifications

Both the NED and EQ ramifications of improved efficiency of rangeland use are insignificant in the years 1985 and 2000. Total net revenue does increase slightly, but all other parameters are essentially unchanged.

In the year 2020, total net revenue increases over four percent, but the total production cost and labor requirements do not change indicating a more efficient pattern of crop production in the Basin.

The EQ ramifications, as reflected by changes in the big game habitat indices, the total amount of soil erosion, the amount of soil erosion at annual rates greater than 0.5 ton per acre and the irrigation return flows, are all insignificant in the years 1985 and 2000. In the year 2020 with improved efficiency of rangeland use, the four habitat indices decrease. The total soil erosion and the acreage with an average annual soil erosion rate in excess of 0.5 ton per acre decrease. The return flow from irrigation also decreases in 2020. Thus, while the big game habitat indices indicate a decline in environmental quality, the soil erosion and return flow parameters indicate an improved environmental quality.

Project or Program Possibility

There appear to be no direct project possibilities. However, technical assistance will be needed in carrying out the range treatment practices.

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN RANGE EFFICIENCY AND SELECTED ITEMS, YEARS 1985, 2000, AND 2020. THIS SAME RELATIONSHIP IN THE BASELINE ALTERNATIVE THAT ALLOWS NO RANGELAND TREATMENT IS THE BASIS FOR COMPAPISON.

RANGE EFFICIENCY

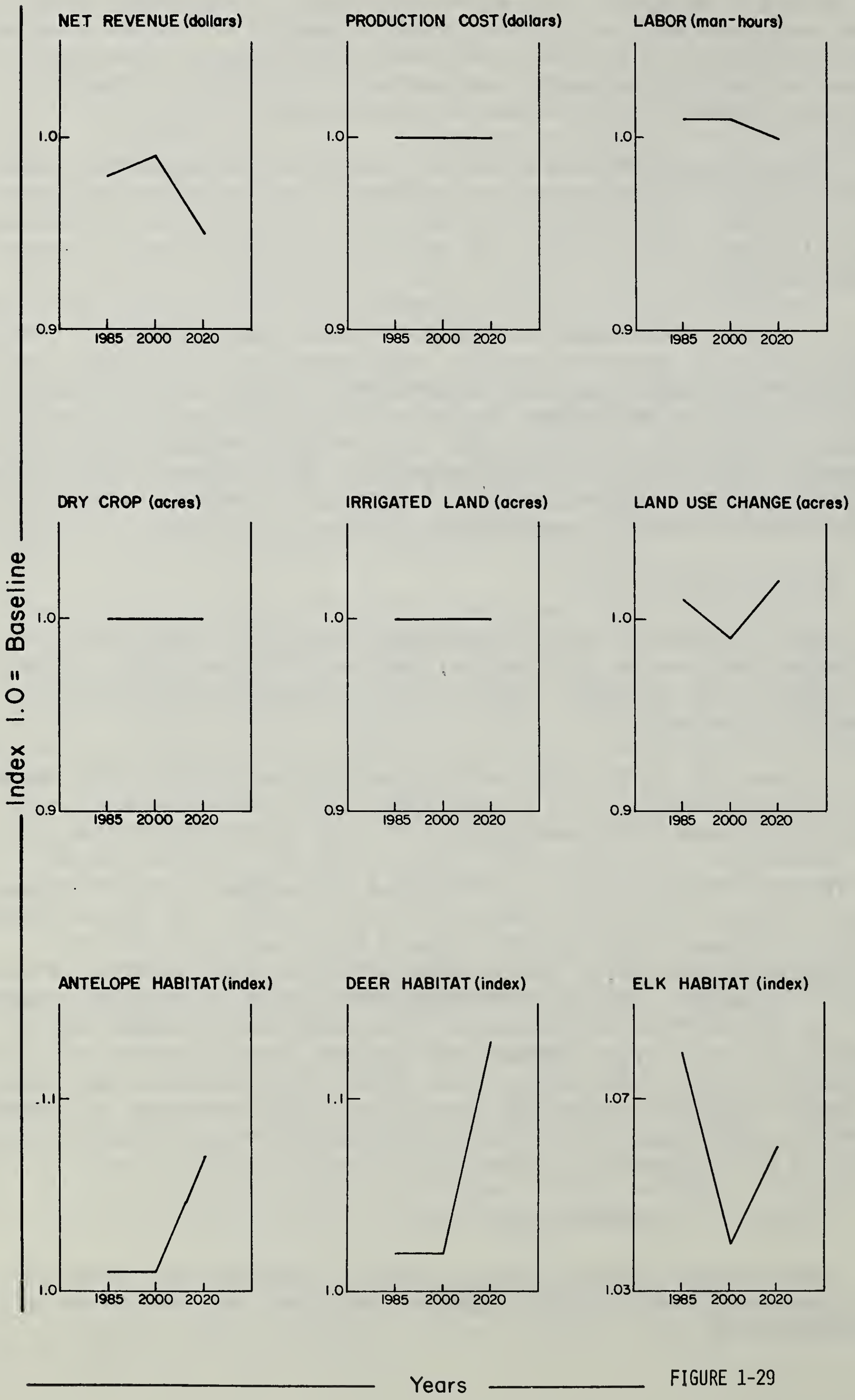


FIGURE 1-29

RANGE EFFICIENCY

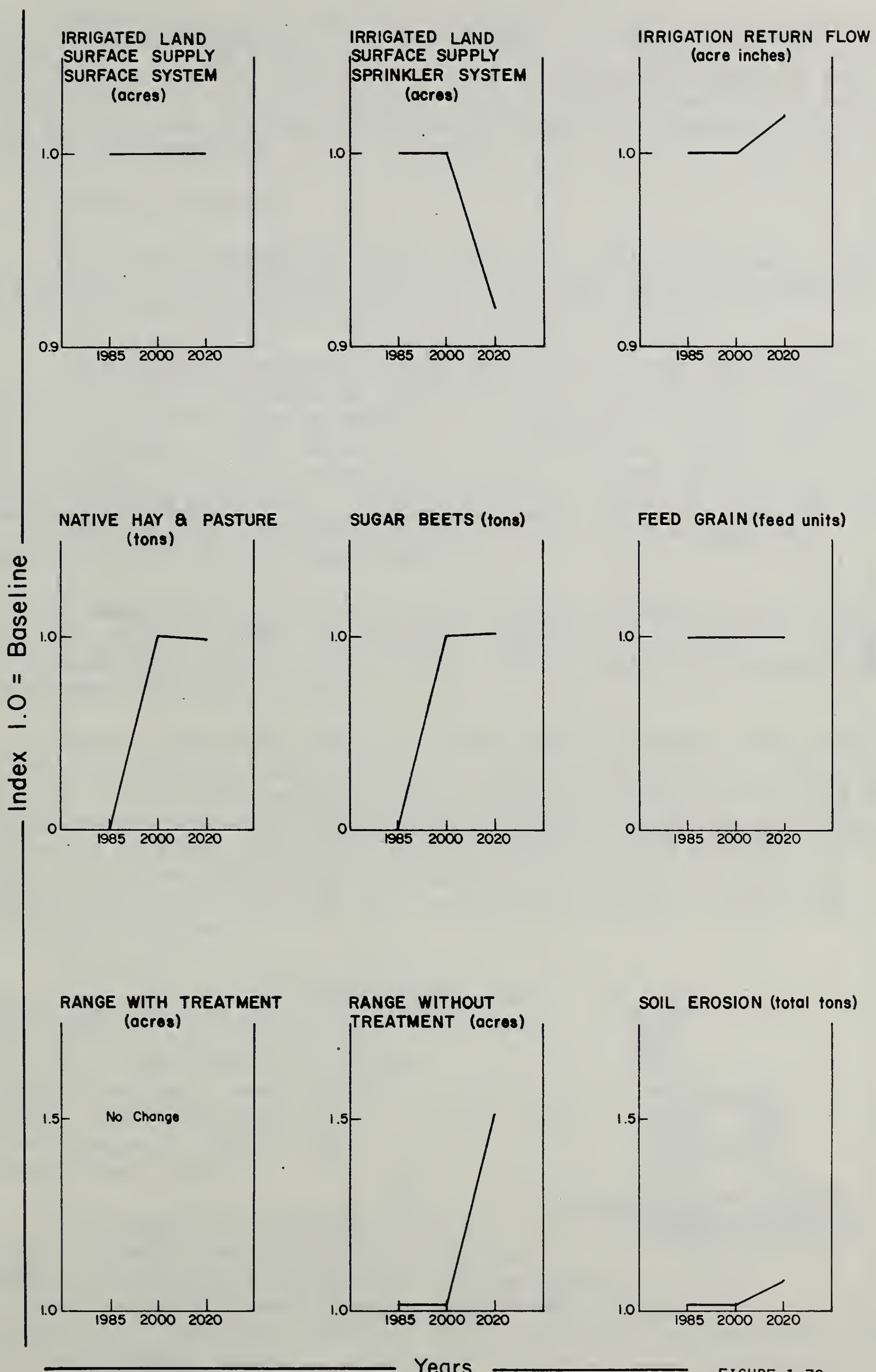


FIGURE 1-30

RANGE EFFICIENCY

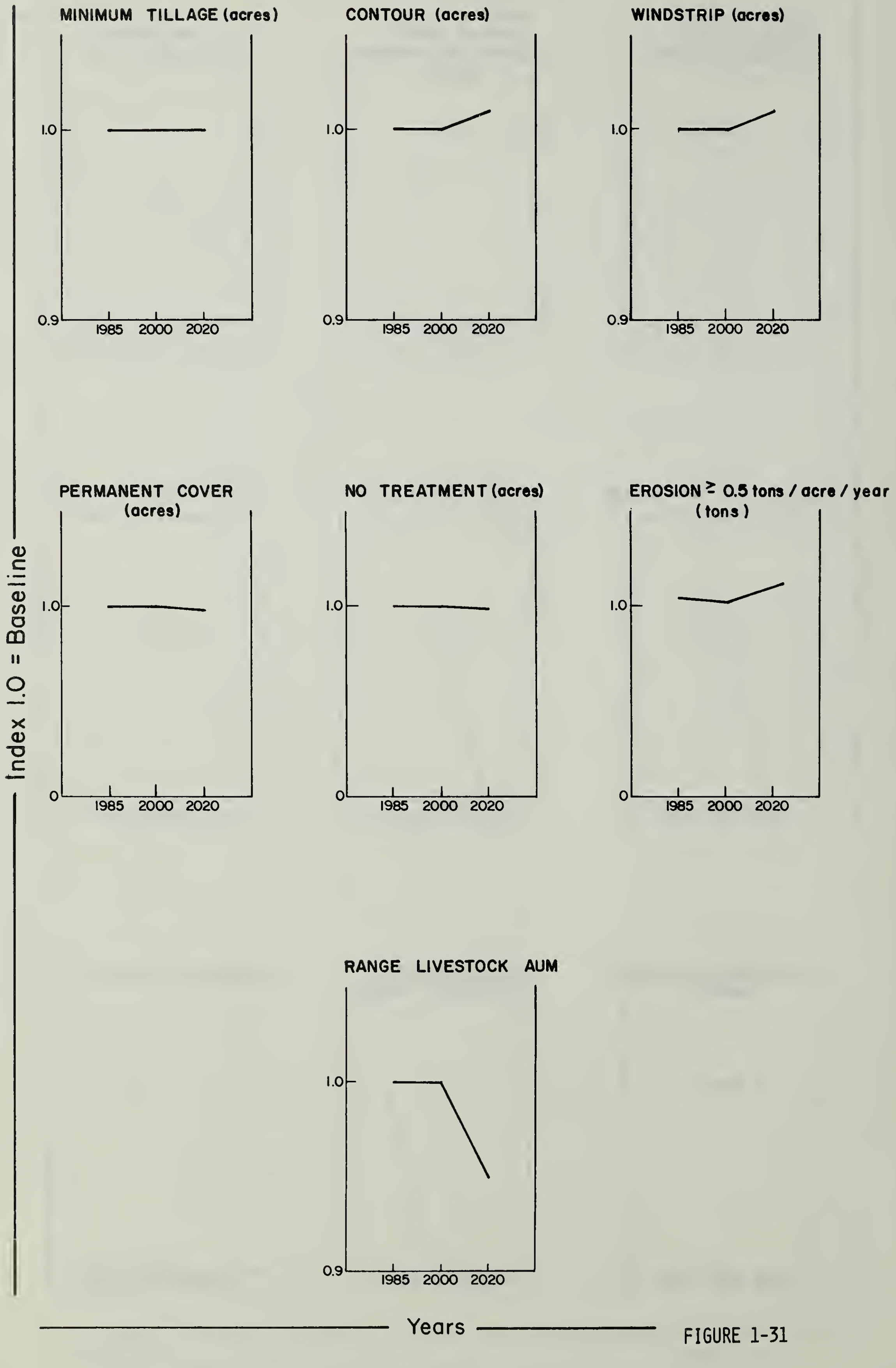


FIGURE 1-31

Big Game Competition

Competition by big game with livestock for rangeland grazing has only a very minor positive effect on total net income, production cost and labor required. There is a greater increase for both big game habitat and soil erosion values. The grazing requirements of antelope and deer are met by using rangeland not needed to produce the livestock grazing requirements.

Detailed Analysis

This range management concern has to do with the effect on the Platte Basin's agricultural economy of big game competing with livestock for noncritical big game area rangeland grazing.

The analysis is concerned only with competition from antelope and deer. Elk is assumed to summer on forest land areas. Preharvest numbers on summer range assumed to be in competition with livestock are: antelope - 78,400 head; deer - 102,800 head. These numbers convert into livestock competition values of 18,800 AUM's for antelope and 20,550 AUM's for deer. These AUM values represent only the type of vegetation that livestock consume and are not the total AUM requirements of antelope and deer.

Alternative Future I and a modification of Alternative Future I with the preceding antelope and deer requirements are used to analyze the competition effects. Alternative Future I has no big game grazing requirement on summer range.

Analyses were made for years 1985, 2000, and 2020. The effects of big game grazing requirements are shown graphically on Figures 1-32 to 1-34. The graphs are designed to show magnitude and direction of change rather than absolute values. Alternative Future I is assumed to be the base for comparison and has an index value of 1.0. The index for Alternative Future I with antelope and deer grazing on summer range then indicates the variance (percentage change) from Alternative Future I.

The effect of antelope and deer competing with livestock for rangeland AUM's is very minor. The majority of the parameters remain constant or have a very slight change. The inter-watershed group changes or shifts are probably very small.

The acreage of irrigated and dry cropland remain constant and there is no change in the type of irrigation, tillage methods or conservation treatment practices used. The production of each crop, including livestock AUM's required from rangeland, also remain constant.

The activities associated directly with rangeland show the greatest changes. In the three respective time periods, the acreage of rangeland without treatment increases 1.9 percent, 1.9 percent and 2.6 percent. The acreage of rangeland with treatment remains constant.

The amount of soil erosion increases as additional AUM's are produced for antelope and deer. The total tons of soil erosion in the Basin and acreage with an average annual soil erosion greater than 0.5 ton per acre increases.

There is also an increase in all of the big game habitat index values. Interestingly, the largest increase is in elk habitat.

The above discussion relates only to Basinwide effects. Within certain areas or watersheds groups, the effects may be greater while some watershed groups may not be affected at all. Within a watershed group, changes indicated in net revenue and labor requirements may affect individual operators beyond their ability to adjust. At the same time, production cost changes may imply changes in inputs that the agribusiness sector is unable to support or survive.

NED-EQ Ramifications

The NED ramifications of big game competing with livestock for rangeland grazing are very minor. Total net income, production cost, labor requirements and commodity production all remain constant or show only a very slight increase.

The EQ ramifications are larger. The big game habitat indices increase for all four species considered. There is also an increase in total soil erosion and in the acreage with an average annual soil erosion rate in excess of 0.5 ton per acre. Thus, while the big game habitat is a plus for one aspect of environmental quality, the increased soil erosion decreases another aspect of the environmental quality.

Project or Program Possibility

There appear to be no direct USDA project or program possibilities.

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN BIG GAME COMPETITION WITH LIVESTOCK FOR RANGELAND AND SELECTED ITEMS, YEARS 1985, 2000, AND 2020. THIS SAME RELATIONSHIP IN THE BASELINE ALTERNATIVE IS THE BASIS FOR COMPARISON.

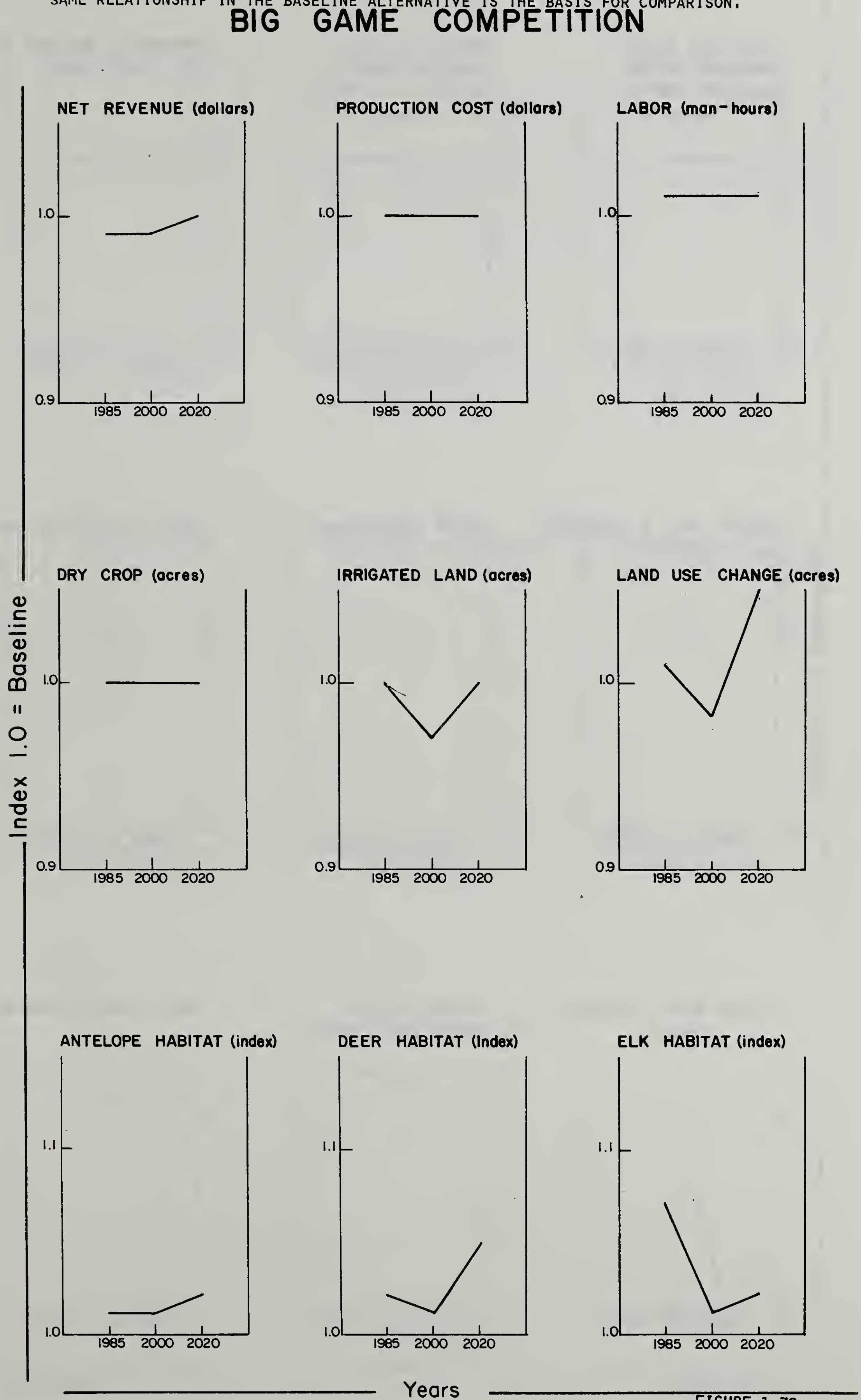


FIGURE 1-32

BIG GAME COMPETITION

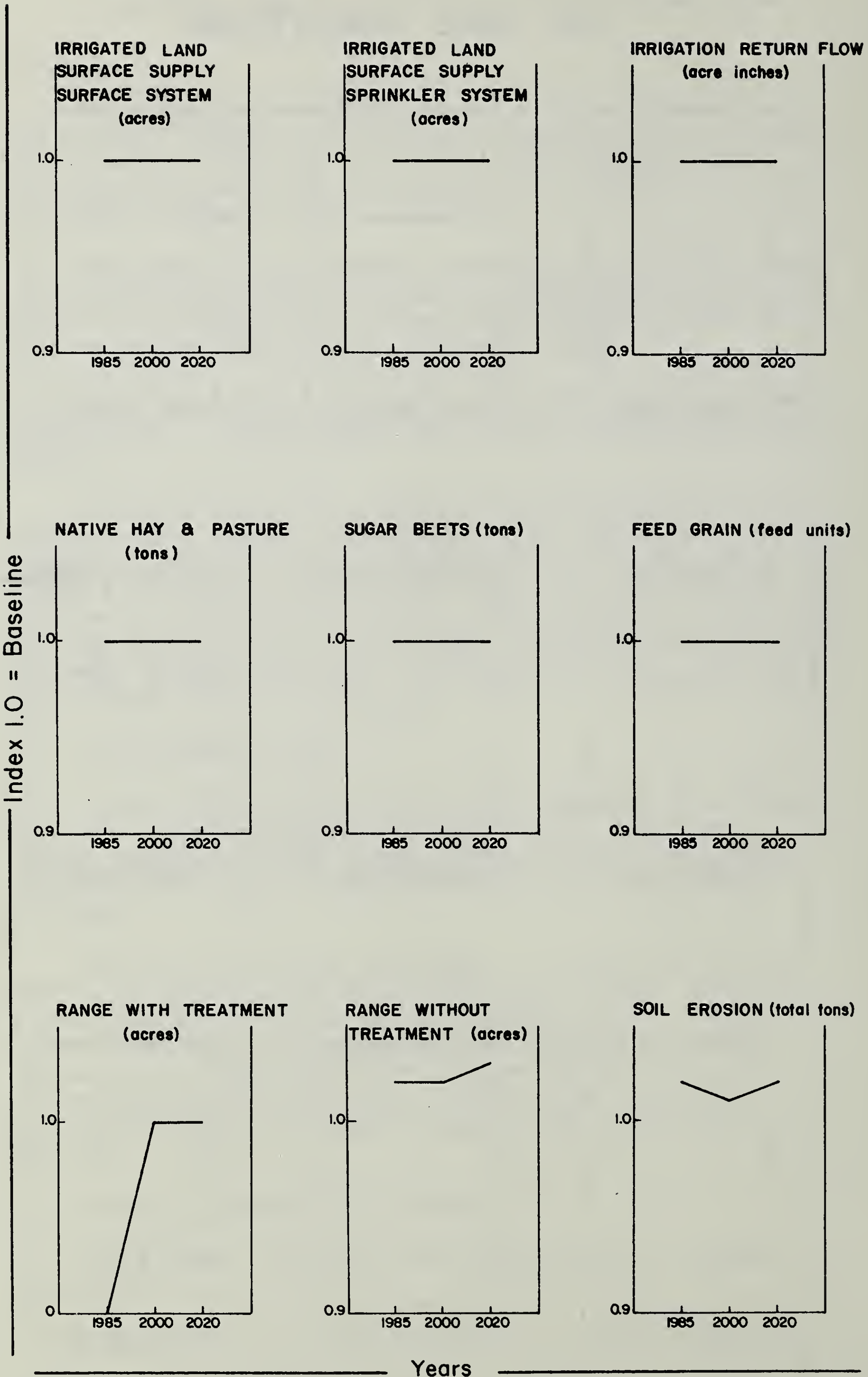


FIGURE 1-33

BIG GAME COMPETITION

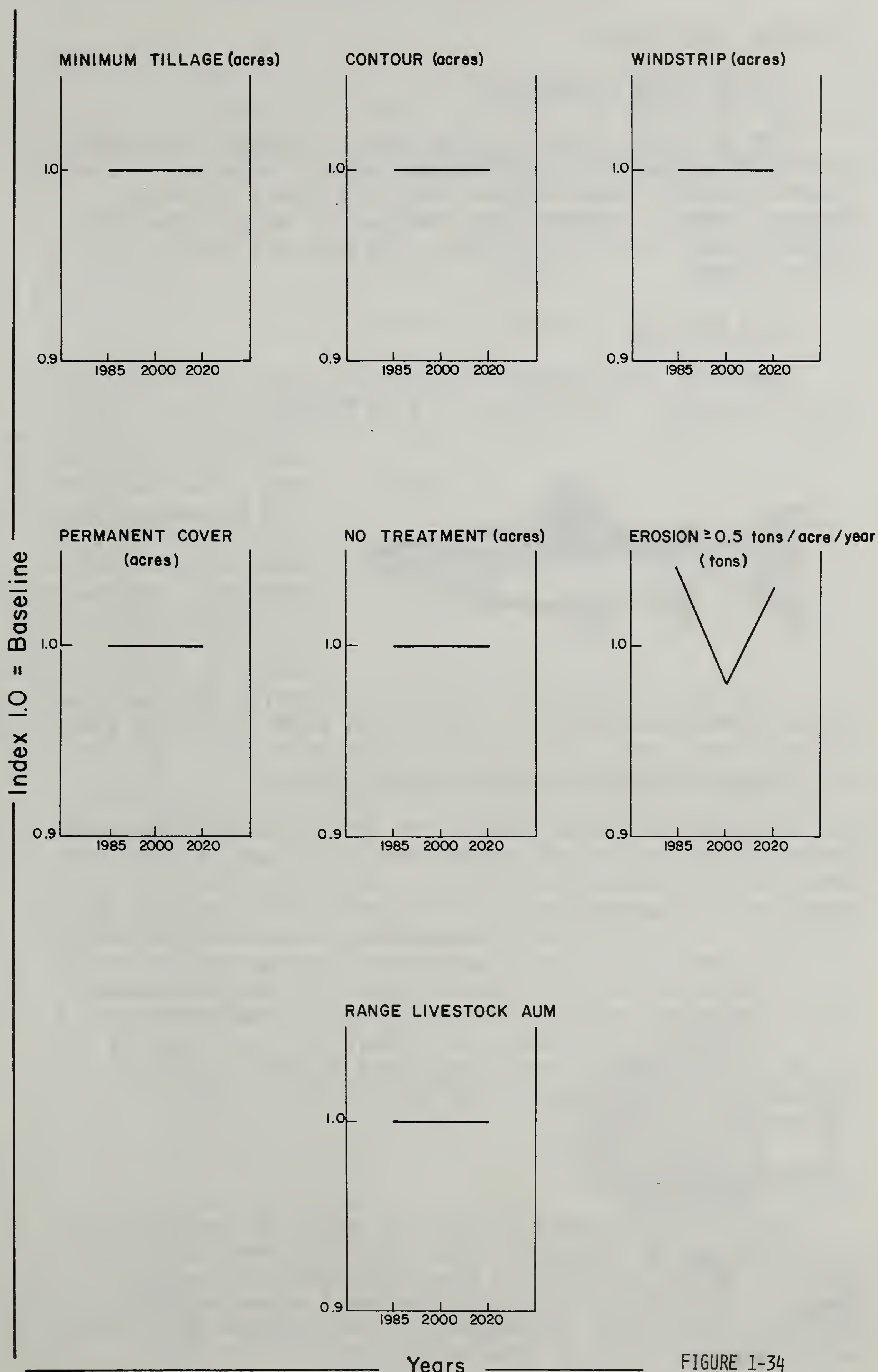


FIGURE 1-34

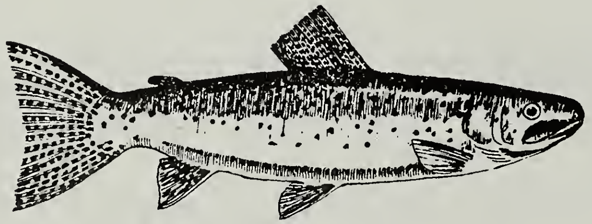
Problems and Concerns

Winter Range Production

The question of what can be done to reverse the trend of decreasing productivity of big game winter range was raised by several people in appropriate state and federal agencies. Numerous general comments from the public touched upon the wildlife-other land use conflict, but were not specific to winter range.

Fish Habitat

Land uses involving soil disturbance can produce siltation of fish habitat. Degradation of fish habitat due to siltation of streams and lakes was identified as a concern. This concern was identified by several Conservation Districts in the Basin; Platte Citizens Committee; representatives of industry and through watershed screening conducted by the Soil Conservation Service. The overall concern is contained in the Federal Water Pollution Control Act.



Rare, Threatened and Endangered Species

Federal law directs actions in ways that shall preserve biological resources and prevent the extinction of rare, threatened and endangered species. More specifically, Federal agencies are directed to use their authorities to carry out programs for conservation of endangered threatened species and to ensure that any actions authorized, carried out, or funded by such agencies do not jeopardize the continued existence of these species or adversely modify their critical habitats. A list, pertinent to the Basin, of animal and plant species that may be impacted by private, state, and federal land use activities will be shown in the detailed discussion of this concern.

Location of Concerns

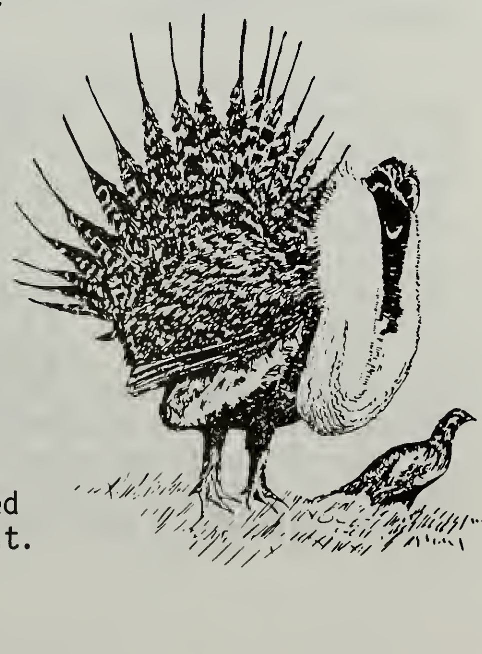
The wildlife concern touches all areas of the Basin, all land uses, and all property right aspects. Areas of critical winter wildlife habitat have been identified in the Basin. There are about 580,500 acres of critical winter wildlife habitat in the Basin. See Table 1-15 for location of critical winter habitat areas by selected species.

Table 1-15 Critical Winter Wildlife Habitat Areas by Selected Species
Platte River Basin, Wyoming

County	Total Area	Antelope	Deer	Elk	Deer-Elk	Deer-Antelope
	Acres					
Albany	101,200	32,600	51,500	14,300	2,600	200
Carbon	91,500		76,400	14,800	300	
Converse	92,700		70,500	22,200		
Laramie	2,800			2,800		
Natrona	288,900	76,300	165,700	10,000	15,800	21,100
Platte	3,400		3,400			
TOTALS	580,500	108,900	367,500	64,100	18,700	21,300

Sediment being delivered to streams and lakes is a major contribution to fish habitat degradation. Crop and rangeland, and the unpaved road system throughout the Basin are large contributors to siltation. Field data specific to the Medicine Bow Mountains show major sediment damage from roads in 32 percent of the stream sites investigated. The major problem encountered concerned the main gravel access roads that are characterized by long distances between culverts.

Much of the cropland in the Basin is concentrated along drainages. This situation tends to accelerate sediment being delivered to streams whenever runoff occurs from the cropland. The same is true for the rangeland.



Basic Cause and Trends of the Concerns

Land use activities for producing goods and services guided by the economic system has side effects, some of which are beneficial to wildlife habitat and some which are not. Conflicts in values have arisen and are reflected in land use planning concerns, area wide pollution planning, and legislation designed to protect wildlife in a quality environment.

The costs of maintaining quality environments including one for wildlife have not and are not fully paid for by those who directly use the resources. Past trends reflect a particular kind of user and societal attitude toward the resource base which has been changing over the years. People are becoming more aware of the environment and many decisions are made in favor of quality with a more equal distribution of the costs.

Complexity and Seriousness of the Concerns

These concerns are particularly complex because they involve different ownerships, ecosystems, and land management objectives. Management of wildlife involves a primary confrontation with property rights. Habitat requirements of different species are seen by many as often being met on private lands. Habitat on federal land is already supported by the public and the property right issue is not raised. On federal land the concepts for multiple use recognize wildlife as a primary user of resources.

Analysis of the Problems and Concerns

The group of concerns all have Environmental Quality as their primary objective. These concerns were grouped because of their anticipated interactions during analysis. (Table 1-16).

The desired results of solving these concerns are nearly identical. They are to preserve the wildlife and its habitat.

Ways of accomplishing the desired results would include, but is not limited to, maintaining or increasing carrying capacity of big game winter range by reducing livestock competition, vegetation modification, and management plans; modifying road construction and maintenance methods, construction operations, farm and ranching methods, city operations to reduce stream and lake siltation; and to prevent extinction of identified rare, threatened and endangered species in the Basin.

Public and private financing would be needed to accomplish the desired results. There are both federal and state programs which provide assistance to private landowners. In many cases the cost-share percentage needs to be increased to provide the needed incentive to the private landowner.

Winter Range Production

Productivity of big game winter range was not directly measured in the study. Range condition is a measure of range productivity. The analysis shows, through the study inventories, that in all counties except Laramie, the big game winter range in excellent and good range condition has proportionately less acres than excellent and good range condition acres for the remaining

Table 1-16

WILDLIFE CONCERNS
Platte River Basin, Wyoming

Primary Objective	Concern	Components of Objective: 1st Level Desired Results	2nd Level Actions that can be taken	3rd Level Programs that could be used
EQ	WINTER RANGE PRODUCTION. (Units of measure are Critical Area Improved Range Management and Critical Area Big Game Use. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Preservation of wildlife.	Maintain or increase carrying capacity of big game winter range by reducing livestock competition, vegetation modifications, management plans.	National Forest projects, state programs of the Game and Fish Department, Resource Conservation and Development project measures, Conservation Operations.
EQ	FISH HABITAT. (Units of measure is water erosion over 0.5 ton/acre/year. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Preservation of wildlife.	Modify road construction and maintenance methods, timber harvest activities, construction operations, farm and ranching methods, and city operations to reduce stream and lake siltation.	State and county programs Forest Management programs, Conservation operations, Great Plains Conservation Program, PL-566, Resource Conservation and Development project measures.
EQ	RARE, THREATENED AND ENDANGERED SPECIES. (Units of measure are Protected Aquatic Habitat and Protected Terrestrial Habitat. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Preservation of biological resource.	Prevent extinction of rare or endangered species.	State programs under direction of the Game and Fish Department, Programs of the Fish and Wildlife Service. Federal land management programs. Endangered Species Act.

range. Using that assumption, it can be concluded that the productivity of big game winter range is less than on other rangeland.

Detailed Analysis

Data collected for this study does not support the concern that winter range productivity is decreasing. The way this concern was analyzed was to determine the range condition in the big game winter range areas and compare these conditions with all the range areas. It was then assumed that if the general condition of the big game range was less than the general condition of all the range, then the big game range productivity is less and could be in a deteriorating situation. Table 1-17 shows the range conditions for the big game winter range areas, the overall range condition of all range by counties and the overall range condition of the range in the Basin.

In all counties except Laramie, the acres of big game winter range in the excellent and good category was less than for all range. Generally, the counties that have big game winter range have an average of 73 percent of all range in the excellent and good category. These same counties average 68 percent of the big game winter range in the excellent and good category.

Assuming that range condition is a reflection of productivity for big game and that a lower percent of the range in the big game area is in the excellent and good category, one could generally conclude that the productivity of the big game winter range is less than that of non-big game winter range. Other reasons, such as winter range generally being located on areas that have southern exposures, wind swept ridges, etc. tend to support this conclusion. Whether this is a trend or not was not measured.

NED-EQ Ramifications

NED ramifications are reflected in a reduction of range output in the form of animal unit months (AUM). Any reduction in AUMs available for use either by big game or livestock would be shown by a reduction in revenue to the Basin. Also, a reduction in AUM's would probably result in an increase in competition between big game and livestock for winter range or, on the other hand, a decrease if big game numbers decline to low numbers due to lack of AUM's.

EQ ramifications would be reflected most likely in a reduction in big game numbers because of a general reduction in range productivity.

Project or Program Possibility

There are existing USDA programs that are aimed at improving range conditions. With improved range conditions, wildlife habitat productivity will increase.

Table 1-17 Big Game Winter Range - Range Condition-1976
Platte River Basin, Wyoming

Area	Range Condition - Percent			
	Excellent	Good	Fair	Poor
Albany Co. - All Range	10	68	19	3
Albany Co. - Big Game Winter Range	9	69	18	4
Carbon Co. - All Range	11	62	20	7
Carbon Co. - Big Game Winter Range	6	60	28	6
Converse Co. - All Range	7	61	31	1
Converse Co. - Big Game Winter Range	7	55	37	1
Laramie Co. - All Range	14	62	21	3
Laramie Co. - Big Game Winter Range	18	65	13	4
Natrona Co. - All Range	6	62	27	5
Natrona Co. - Big Game Winter Range	10	58	26	6
Platte Co. - All Range	11	63	25	1
Platte Co. - Big Game Winter Range	10	60	30	0
Counties with Big Game Winter Range-All Range	9	64	23	4
All Co. - Big Game Winter Range	9	59	27	5
Platte Basin - All Range	9	64	23	4
All Counties - Big Game Winter Range	9	59	27	5

Fish Habitat

Land use activitiy causes soil disturbance that may result in fish habitat deterioration. The change in fish habitat ranges from a loss of 48 miles of streams to a gain of 75 miles (1985 impacts).

Detailed Analysis

Fish habitat currently classified as Class 1 and Class 2, equals 316 miles of stream. Land use activities frequently cause soil erosion. Table 1-18 entitled "Effects of Alternative Futures on Fish Habitat" shows the impact of different alternative futures in a ranking of the

Table 1-18 Effects of Alternative Futures on Fish Habitat
Platte River Basin, Wyoming

Alternative Future	1985		2000		2020		Ave. Net Agricultural Revenue (All Years)	
	Miles	Rank	Miles	Rank	Miles	Rank	Rank	$Million
I OBERS - Crop Production (Average)	316	6	318	3	275	3	4	60
II OBERS - Return Flow Reduction (Average)	318	4	322	2	268	6	8	57
III OBERS - Municipal & Industrial Water (Average)	320	2	316	5	276	2	6	59
IV Maximum Agricultural Production Return Flow Reduction (Average)	248	8	246	8	248	7	2	135
V OBERS - Imported Irrigation Water (Average)	317	5	314	6	271	5	3	67
VI OBERS - Municipal & Industrial -Import Water-Drought (Average)	320	3	317	4	275	4	5	59
NED Maximum Agricultural Production (Average)	251	7	246	7	243	8	1	141
EQ Soil Erosion Reduction (Average)	391	1	467	1	535	1	7	58
Baseline	316	--	318	--	275	--	--	

best (1) to the worst (8). The miles of stream not impaired are approximations of the impact that soil erosion will cause. Soil erosion in excess of 0.5 ton per acre per year may contribute to fish habitat deterioration.

Rare, Threatened and Endangered Species

Rare, threatened and endangered wildlife and plant species were identified within the Basin boundary. The identification shows general location and habitat requirements for the species. By publishing this list, land and water users and land and water use planners will become aware of the rare, threatened and endangered species and related habitats. Through this awareness, the users and planners can take into consideration these species, both wildlife and plants, in future plans.

Detailed Analysis

The analysis consisted of a literature search to determine the rare, threatened and endangered wildlife species within the study area boundary. In addition to wildlife species, plant species were also identified. Table 1-19 on pages 1-90 and 1-91 shows the species identified in the Basin, the general location, and general habitat requirements. This table will assist in making persons aware of what species are considered rare, threatened and endangered and where the species may be found. This awareness will then help land and water users take into consideration these species in future plans.

The State of Wyoming has published a list of species that are considered rare. This data is combined with the list published by the federal government and is shown in Table 1-19. Data for the table came from the following sources:

1) "Current Status and Inventory of Wildlife in Wyoming", Wyoming Game & Fish Department, Cheyenne, Wyoming - July 1977.

2) "Special Report Number 3 - Endangered or Threatened Species in Wyoming", compiled by Kent D. Kennlyne, Wyoming Coal Coordinator, U.S. Fish and Wildlife Service, Casper, Wyoming - March 1977.

NED-EQ Ramifications

The NED ramifications of the concern were not specifically analyzed. However, it is conceivable that because of the concern to preserve or maintain a particular habitat, the NED implication would be great even to the point of abandoning a project designed to maximize NED. EQ ramifications would be great in that by ignoring rare, threatened and endangered species could lead to their extinction.

Table 1-19 Platte Basin Rare, Threatened, and Endangered Species
Platte River Basin, Wyoming

COMMON NAME	SCIENTIFIC NAME	FEDERAL LIST	STATE OF WYOMING LIST	DISTRIBUTION	HABITAT
Meadow jumping mouse	Zapus hudsonius	No	Yes	Southeastern Wyoming & Black Hills	Low meadows, near streams. Coniferous or deciduous forests with lush undergrowth of grasses and forbs.
Black-footed ferret	Mustela nigripes	Yes	Yes	Eastern Wyoming	Prairie dog towns--areas that are good prairie dog habitat and have prairie dogs.
Least tern	Sterna albifrons	No	Yes	North Platte River	Sandy Islands along the North Platte River during summer.
Purple martin	Progne subis	No	Yes	Southeastern Wyoming--Chugwater Creek and Laramie River confluence.	Insectivocous and exists where insects are numerous. Colonial nester--natural cavities of trees and cliffs
Brown-capped rosy finch	Leucosticte atrata	No	Yes	Alpine region of Medicine Bow Mountains.	Summer resident--alpine tundra, precipitous cliffs, talus slides, slow-melting snowbanks, rarely desends below 6,000 feet.
Scrub jay	Aphelocoma coerulescens	No	Yes	Southern part of state, most frequently in southwest. Have been reported near Laramie, Henry's Fork, Green River and Evanston.	Foothills and lower mountain slopes, usually at elevation of 5,000 to 6,000 feet.
Burrowing owl	Speotyto cursicularia	No	Yes	All of Wyoming--most commonly plains area below elevation 8,000 feet.	Prairie dog towns--seldom found in the absence of active colonies of burrowing mamals. Deserts, grassland, prairies and agricultural areas.
American peregrine falcon	Falco peregrinus	Yes	Yes	Above the confluence of Douglas Creek and the North Platte River. Major drainages	Rocky cliffs, rimrocks near water, trees.
Bald eagle	Haliaeetus leucocephalus	Yes	No	All of Wyoming.	Rocky cliff, rimrocks near water.
Western smooth green snake	Opheodrys vernalis	No	Yes	Unita County, southwestern Carbon County, eastern Natrona to western Platte County, near the Weston-Crook County-and South Dakota-State line	Damp, grassy or forest environments. Foothills up into mountains.
Wood frog	Rana sylvatica	No	Yes	Snowy Range west of Laramie.	Damp shady woods in association with clear streams of leafy ponds.
Shovelnose sturgeon	Scaphirhynchus platorynchus	No	Yes	North Platte River, Powder River.	Near or at bottom of large silty rivers in the current.
Northern Pearl dace	Semotilus margarita nachtriebi	No	Yes	Niobrara River, Van Tassel Creek in Niobrara County	Clear, cold streams with some gravel.
Finescale dace	Phoxinus neogaeus	No	Yes	Niobrara River near Wyoming-Nebraska state line.	Cool, weedy, small streams and small lakes.
Hornyhead chub	Nacomis biguttatus	No	Yes	Laramie and North Laramie Rivers, Rawhide Creek, and Box Creek	Clear streams with gravel bottoms.
Suckermouth minnow	Phenacobius mirabilis	No	Yes	Lodgepole Creek in Laramie County, Laramie River near mouth.	Riffle areas, preferring clear water, sand or gravel bottom.

Table 1-19 (continued) Platte Basin Rare, Threatened, and Endangered Species
Platte River Basin, Wyoming

COMMON NAME	SCIENTIFIC NAME	FEDERAL LIST	STATE OF WYOMING LIST	DISTRIBUTION	HABITAT
Common shiner	Notropis cornutus	No	Yes	Streams tributary to North and South Platte Rivers, Laramie and North Laramie Rivers in Platte County, Lower Horse Creek in Goshen County.	Clear, gravel-bottomed streams.
Laramie columbine	Aquilegia laramiensis	Proposed	No	Laramie Range in Albany and Converse Counties.	Shaded igneous cliffs on west facing slopes Foothill scrub zone between 7,000 and 8,500 elevations.
Eared rockcress	Arabis demissa var. languidla	Proposed	No	Southwestern Sweetwater and southeastern Albany Counties.	Exposed stony knolls of especially limestone, Foothill scrub; desert and basin zone between 6,200 and 7,500 foot elevation.
Simple rockcress	Arabis demissa var. russeola	Proposed	No	Laramie Hills in southeastern Albany County and in southwestern Sweetwater County.	Exposed stony knolls of especially limestone. Foothill scrub zone; desert and basin zone between 6,500 and 7,500 feet.
Porter sagebrush	Artemisia porteri	Proposed	No	Eastern Fremont County.	Dry, loose, shaley soil near 6,000 foot elevation. Desert and basin zone.
Thick-nerved smalliving sedge	Carex microptera var. crassinervia	Proposed	No	Southeastern Natrona County near summit of Casper Mountian.	Alpine and spruce zone. Open parks and moist meadows at elevations between 7,000 and 11,000 feet.
Colorado butter-flyweed	Gaura neomexicana var. coloradensis	Proposed	No	Eastern Laramie County.	Heavy soils in plains or river bottoms at elevations between 5,000 or 6,500 feet.
Fremonts' bladderpod	Lesquerella fremontii	Proposed	No	Southwestern Fremont County.	Calcareous gravel ridges at about 8,500 foot elevation. Foothill scrub zone.
Feverfew	Parthenium ligulatum	Proposed	No	Upper branches of North Platte River.	Gypseous shale containing selenium in basins and foothill scrub zones. Grows at elevations between 5,000 and 7,000 feet.
Payson penstemon	Penstemon paysoniorum	Proposed	No	Fremont, Sublette, Lincoln, Unita and Sweetwater Counties.	Sandy creek bottoms, alkaline shale bluffs, dry hills. Foothill and scrub zones between 6,500 feet elevation.
Simple tansy	Tanacetum simplex	Proposed	No	Southeastern Albany County.	Stony slopes, foothills and scrub zones at elevation between 7,000 and 8,000 feet.
Sword townsendia	Townsendia spathulata	Proposed	No	Southcentral part of state in Natrona, Fremont and Sweetwater Counties.	Hills and mountains in foothill scrub zone between 6,000 and 8,000 foot elevation.

Project or Program Possibility

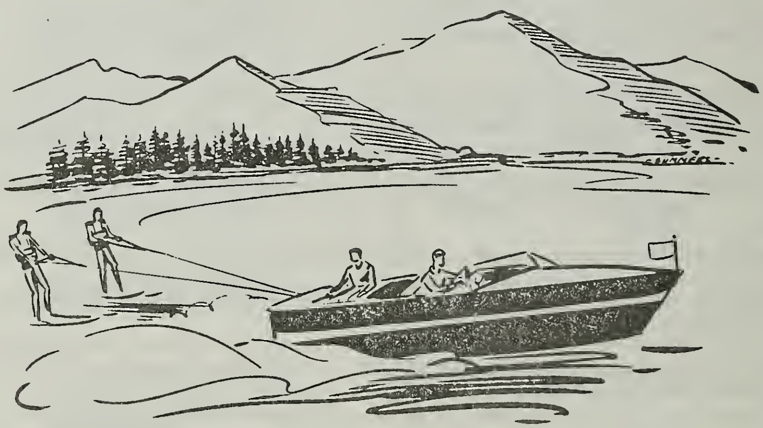
There may be some justification for compensation payments to landowners to protect habitat of rare, threatened, and endangered species. This, in fact, is already being done in some cases. For instance, the Fish and Wildlife Service makes payments to landowners for forage lost in an effort to preserve or maintain black-tailed prairie dog towns which can be critical habitat areas for the black-footed ferret. (See Current Status and Inventory of Wildlife in Wyoming, Wyoming Game and Fish Department, July 1977).

RECREATION GROUP

Problems and Concerns

Water Recreation Use

Underutilization of existing water developments for recreation was identified as a concern. There are five large reservoirs on the main stem of the North Platte River in the Basin. Three of the reservoirs - Glendo, Guernsey, and Seminoe - are designated state parks. Alcova Reservoir is part of the Natrona County park system.



The five reservoirs account for a substantial proportion of the Basin's total supply of water based recreational opportunities. Nevertheless, actual use is far below potential use.

This concern was identified by the North Platte Citizens Committee and in the Platte River Basin Recreation Working Paper.

Public Access

Lack of access to public lands and water for hunting and fishing due to access across private or leased land; and lack of public access to private lands for hunting and fishing were identified as a concern.

This concern was identified in the Platte River Basin Recreation Working Paper, and by the North Platte Citizens Committee.

Wilderness Areas

Opportunities for scientific investigations and recreation in a wilderness setting are less than the demand were identified as concerns by the Wilderness Society and Sierra Club.

Presently there are 58,000 acres of Wilderness or Primitive Area and more than 235,000 acres of roadless area in the Basin. In 1976, the Secretary of Agriculture directed the Forest Service to update the Roadless Area Review and Evaluation (RARE) and prepare a second evaluation using refined criteria (RARE II). The criteria used in RARE II included the concerns expressed in the Platte Basin as well as a determination of the need for wilderness. Congressional action on the Administrations Wilderness Proposal will define the Basin's role in providing wilderness opportunities.

Flat Water Visual Quality

Degradation of visual qualities of lakes, ponds, and reservoirs was identified as a concern. Since the five main stem reservoirs were constructed primarily for irrigation water storage, there is a large fluctuation in the water surface elevations at the height of the recreation season. At the time these reservoirs were authorized, recreation was not one of the authorizing factors. When these water surfaces are low, large "mud flats" are visible which detract from the visual quality of the reservoirs. As more recreation areas are developed around existing lakes, ponds, and reservoirs to meet the demand for water based recreation, the visual quality of those areas could be degraded.

This concern was identified by the North Platte Citizens Committee, and by the Izaak Walton League.

Location of Concerns

The concerns in this group are generally scattered throughout the entire Basin. Concerns regarding developed water recreation are limited to the five main stem reservoirs. Restricted access to recreation land is found throughout the Basin. There is little site specific inventories detailing what access is needed. Wilderness and roadless area concerns are limited to National Forest and Bureau of Land Management lands. Visual quality of lakes, ponds, and reservoirs is a concern throughout the Basin.

Basic Cause and Trends of the Concerns

As the population of the Basin and the nation continue to increase, the demand for enjoyable recreation will increase. In time, more people will use the water developments and thus absorb the existing extra capacity of the recreation potential. Existing underutilization will gradually give way to proper use, then to overuse. Even now, the time of recreation peaks, such as summer

holidays, overcrowd the facilities that are not used during off-peak times such as midweek or wintertime.

The problem of denying public access to public lands because of intervening private land stems from the conviction that appropriate access should be provided. Very little public land is completely land-locked by private areas such that access is actually denied, but there are many situations where access is far from convenient. In the case of private use of leased public land, public access can be made a condition of the lease. The trend appears to be in the direction of adding the public rights to these leases, and this will accelerate as the public makes its wishes known in the political arena.

Wilderness and backcountry are not now in short supply. The issue is that undeveloped areas will need to be reserved now in order to provide wilderness experiences for future generations. The conflict occurs with the development of such areas for the production of timber, and in some cases, minerals. The wilderness question has been raised to a national level by way of the Forest Service Roadless Area Review Evaluation Studies, I and II, and the Bureau of Land Management review of land under their jurisdiction that is being considered for wilderness.

Complexity and Seriousness of the Concerns

The seriousness of the recreation concerns in terms of economic ramifications and trade-offs required to meet the national and regional demands for recreational activities is not known. The recreation industry ranks as a very important business sector in the Basin.

Analysis of Problems and Concerns

Two of the concerns in this group have National Economic Development as their primary objective and two have Environmental Quality as their primary objective. The concerns with NED as primary objectives are water recreation use and public access. The concerns with EQ as their primary objectives are wilderness areas and flat water visual quality. (See Table 1-20). These concerns were grouped together because of their anticipated interactions during analysis.

Analysis shows that the existing flat water available for boating, fishing, and swimming is more than sufficient to meet projected need at least through the year 2020. This could be interpreted as underuse of existing facilities, however, to fully utilize the facilities would no doubt detract from the natural beauty and visual qualities now enjoyed by the present users. Some recreation facilities are presently overcrowded at times. These facilities are mostly near large population centers. Overcrowding usually occurs in key periods during the recreation season. At other times the facilities stand almost unused.

Table 1-20 RECREATION CONCERNS
Platte River Basin, Wyoming

Primary Objective	Problem	Components of Objective: 1st Level Desired Results	Components of Objective: 2nd Level Actions that can be taken	Components of Objective: 3rd Level Programs that could be used
NED	WATER RECREATION USE. (Units of measure are Boating, Swimming, and Water Skiing. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Increase utilization of existing water developments for recreation.	Increase fishing, boating swimming and water skiing by providing more boat docks and paved roads.	PL-566, State programs, Resource Conservation and Development project measures.
NED	PUBLIC ACCESS. (Units of measure are Guaranteed Fishing Access and Guaranteed Hunting Access. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Improved access.	Provide access through easements, construction of access facilities, condemnation of land or land purchase.	PL-566, State programs, Resource Conservation and Development project measures.
EQ	WILDERNESS AREA. (Units of measure are Wilderness Classification and Backcountry Management. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Preserve wilderness.	Classify undeveloped roadless areas as wilderness.	Forest Management plans.
EQ	FLAT WATER VISUAL QUALITY. (Unit of measure is Restricted Drawdown See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Maintain or improve the beauty of lakes, ponds, or reservoirs.	Control recreation use, delay reservoir drawdown for agricultural purposes until after recreation season, buffer zones between lakes and developments.	Conservation operations, PL-566. Great Plains Conservation Program, Resource Conservation and Development project measures, Federal land management programs, and state programs.

The desired results in solving the recreation category concerns are many and seemingly at times in direct conflict with each other. Desired results would include increased use of existing water development, improved access, preservation of wilderness, and maintenance or improvement of the beauty of lakes, ponds, or reservoirs. Any changes in land use or recreational patterns could potentially harm archeological and historic sites. These sites need to be considered in implemention planning.

Ways to accomplish the desired results would include providing more boat docks and support facilities such as paved roads and parking areas; provide access through easements, construction of access facilities, land purchase or land condemnation; develop facility management systems which may include adding some new recreation areas, closing some existing areas or enlarging some existing areas; classify undeveloped roadless areas as wilderness; and control recreation use, eliminate reservoir drawdown until after the recreation season and develop buffer zones between lakes and developments.

Both public and private financing would be needed to accomplish the desired results. Federal and state programs are available to assist individuals or groups in specific areas. Cost-sharing is available from some of these programs.

Water Recreation Use

The concern was stated as underuse of existing water developments for recreation. This was further interpreted to mean existing flat water developments. This may be a real concern within the Basin, but it is not a serious problem.

Detailed Analysis

The publication entitled "Recreation Working Paper" 2/ was used as the basis for the analysis of this concern. The Working Paper made analysis of recreation problems and needs using three population projections. These projections were OBERS C, OBERS E, and a WWPP projection. 3/ OBERS Series E population projections were used in

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2/ Recreation Working Paper - Platte River Basin, Cooperative Study - Wyoming, December 1976.

3/ OBERS E population projections are 27 (1985) to 43 (2000) percent below current State of Wyoming population projections. It should be noted that the State projections only go through the year 2000. The Recreation Working Paper does have an analysis of problems and needs using population projections furnished by the WWPP. These WWPP projections, when compared to the current State of Wyoming projections, are only 5 percent (1985) and 6 percent (2000) below the current State projections.

the analysis for this report. Indicators used in the analysis were boating, fishing on lakes and reservoirs, swimming, and water skiing.

Presently there are about 71,600 acres of flat water in lakes and reservoirs in the Basin suitable for boating. Boating is an activity that should be considered in terms of both an area and facility standard. The area requirement for boating varies by boat size and by activities, i.e. a 150 horsepower inboard motor boat pulling two water skiers requires more space than a 12 foot fishing boat powered with a 7.5 hp outboard. A general standard is 12 to 15 surface acres per boat. In terms of facilities, the standard assumes a single boat ramp can handle 40 boats per day taking into account the concentration in unloadings and loadings that occur in the morning and again in the evening.

It is not likely that all boats would be launched on a given day or weekend, so an assumption was made in regard to boating use patterns. It is assumed that no more than one-third of the registered boats would be launched on the peak day.

Boating participation is projected to be 323,119 recreation-days in 1985; 363,633 in 2000; and 424,863 recreation-days by the year 2020. In 1975 there were an estimated 4,950 boats registered to residents of the Basin. It is projected that resident registration would increase to 5,240 by year 1985; 5,684 by year 2000; and 6,311 by year 2020. Using the assumed one-third of the registered boats launched on the peak day would mean that by year 2020 about 2,100 boats registered to Basin residents would be launched. A 1967 Wyoming boating study found that there were 2.6 out-of-state boats on Wyoming waters for every resident boat. If this relationship holds true, then on the peak day in year 2020 it could be expected that there would be about 2,100 resident boats and 5,500 non-resident boats launched. The expected increase in peak day boat numbers would require the construction of 26 new ramps along with appropriate parking spaces and dock facilities. 4/

In year 2020 peak day boat numbers would have about 9.4 acres per boat or about two-thirds the recommended standard. The 1967 Wyoming boating study found the average boating time per day to be about four hours regardless of boating activity or boat size. It would seem appropriate to adjust the acreage standard (or the number of boats) since the boats launched on the peak day are not likely to be in use at the same time. If it is assumed that only 50 percent of boats launched on the peak day will be in use at any one time, the acreage of water surface per boat (18.8 acres) exceeds the recommended standard. In other words, the supply of current boating opportunities will be more than sufficient to meet the 2020 needs.

4/ Table II - page 5 - Recreation Working Paper

One problem of using a simple quantitative standard is that it makes no allowance for qualitative factors. Some of the water included in the 71,600 acres of lowland lakes and reservoirs are in the Laramie Plains area and are generally considered to be too cold and too windy for water skiing. The same qualification may apply to Seminoe Reservoir--one of the Basin's largest water bodies. The present management plan for Guernsey Reservoir, a large and popular boating area, calls for an almost complete drawdown in late July and August, at the peak of the boating season. If a surface standard was used that took qualitative factors into account, the supply of boating water in the Basin would undoubtedly be reduced below 71,600 acres. No attempt was made to rank or classify Basin waters by some type of boating activity criteria and there is no basis to adjust the 71,600 acre figure used.

The Basin contains more potential fishing opportunities than any other region in the State. Of the 71,600 acres of flat water, two percent is alpine lakes and reservoirs, 94 percent lowland lakes and reservoirs, and four percent is farm ponds. The supply of sport fishing opportunity from flat water is estimated to be 1,541,000 fisherman days. About 86 percent of these are on public lands or have access permanently guaranteed. It is projected that the present supply will meet projected needs through the year 2000. However, by the year 2020 it is projected there will be a need of about 671,300 fisherman-days from lakes and reservoirs.

Swimming and water skiing require similar natural resource areas. The requirements for water skiing were taken into account in the boating standards. Swimming in lakes and reservoirs in Wyoming is an activity of modest popularity. There are few natural beaches in the state and even if they were abundant and attractive, Wyoming's climate is not conducive to outdoor swimming. Most of the state's lowland standing waters contain water too cold to offer comfortable swimming conditions until late in the summer. Wyoming's wind adds a chill factor that the exposed swimmer finds discouraging even if the water temperature is conducive to swimming. Finally, Wyoming's summer climate lacks the breezeless, hot, muggy days common to much of the rest of the Nation--the conditions that tend to drive people to the water for a refreshing swim. However, it

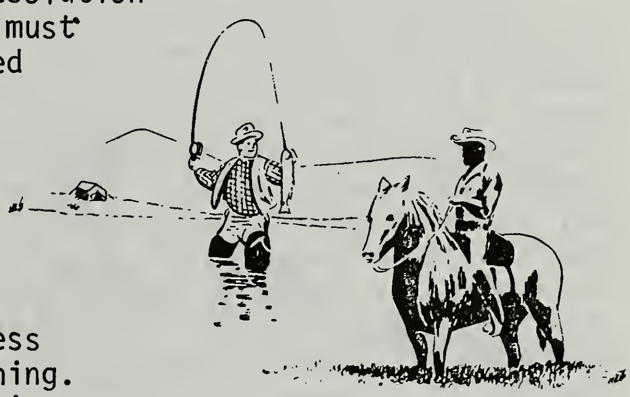
is projected that swimming will increase from an estimated 672,000 recreation-days in 1985 to 903,900 recreation-days in 2020 for a projected growth of about 34 percent. Water skiing is estimated to grow from 119,400 recreation-days in 1985 to 185,500 recreation-days in 2020 for an increase of about 55 percent. Future needs for both swimming and water skiing can be met with the existing flat water developments.

Project or Program Possibility

Each flat water facility would need to be analyzed to determine what type of support facility would be needed. Then some agency (state or federal) or some local group would need to undertake the responsibility to provide the needed facilities. This would include an advertizing campaign to entice users to the facilities.

Public Access

The access concern is presented under the concept that many recreational opportunities are unavailable to the public because of constrained access either through a "fee" or no public access route. The lack of access may affect resources found on private lands. These resources are public resources generally involving fishing and hunting activities. As a partial resolution of this concern, the recreationists must develop a dialogue with the concerned landowners aimed at a mutual understanding and agreement for controlled public access.



Detailed Analysis

In the analysis, this concern was further expanded to include access to private land for hunting and fishing. Anyone familiar with outdoor recreation opportunities in Wyoming is aware of and has an appreciation for the range of opportunities provided by private landowners. The relative contribution of the private sector varies from activity to activity. A substantial proportion of the deer, antelope, pheasant, turkey, duck, and geese populations in the Basin depend on private lands for food and cover. Many privately owned lakes and reservoirs in the Basin are utilized by residents and out-of-state visitors alike for boating and fishing activities. In these cases, the private landowner is involved with the actual production of recreation opportunities. In other cases, the property owner may only control access to the recreation opportunity. Recreation activities that frequently occur on private lands and where the landowners would control access or the opportunity to participate would include not only hunting and fishing, but snowmobiling, cross-country skiing, picnicking, camping, motorbike riding, and observing wildlife.

In either of the above two cases the recreationist is participating in an activity made available to the participant by the property owner or the participant was allowed access to the area of participation as a

courtesy of the property owner. In most instances, the opportunity to participate was made available at little or no cost to the recreationist.

In regard to only hunting and fishing, there presently are about 195,400 big game hunting days available and 2,127,000 fisherman-days available in the Basin. Projections show that the present supply of big game hunting days will not meet the anticipated demands by the year 1985. By the year 2020 the demands are projected to be 321,700 hunting days greater than the supply. Fishing supply for lake or reservoir fishing are projected to meet the demands through the year 2000. However, by 2020 the demands are expected to exceed the supply by 671,000 fisherman-days. Stream fishing demands are expected to exceed the supply by the year 1985. By 2020 the demand for stream fishing is expected to exceed the supply by 688,000 fisherman-days. Present fisherman-day supply on public lands or where access is permanently guaranteed in only about half the projected needs or 1,557,000 fisherman-days.

The access concern should not be defined simply as the public at large being denied free access. There is a need to accurately identify the type and extent of damage, legal liability to the landowner, and inconvenience that recreationists cause property owners. This information would provide tangible evidence of the problems created with public access. Documentation is needed before landowners can decide objectively what kind and how many recreationists can be granted access to and across their privately owned lands. This information is needed to evaluate the risk that confronts property owners when public access is granted. If the factors could be determined, landowners and recreationists would have a basis for reaching an agreement for public access.

NED-EQ Ramifications

With hunting and fishing opportunities being considered as a national economic development measure of the Basin, then limiting access to these opportunities could be considered as having a detrimental effect on the NED in the Basin. This is assuming that both hunting and fishing management plans are structured around providing hunting and fishing opportunities. The NED ramifications would have to do with tradeoffs involved in the landowners providing access to hunting and fishing opportunities. In some cases lack of access to hunting opportunities may cause a big game herd to increase to the point where it damages the landowner's crops or competes with the landowner's livestock. In this case, by not allowing access, a landowner would suffer a detrimental economic effect. Most likely it is a regional economic effect. However, allowing access also may cause a detrimental effect in that inconvenience or damage may outweigh any trespass fees a landowner may collect.

Wilderness Area

The passage of the 1976 National Forest Management Act and the second Roadless Area Review and Evaluation (RARE II) have thrown into question the land base and potential allocation for wilderness classification. The RARE II Final Environmental Impact Statement and the Administration's Wilderness Proposal affects over one-fourth of the National Forest and is awaiting action by Congress.

The remainder of this section discusses the original Wilderness Concern in the context of the 1975 state-of-the-art methodologies and land allocation. Due to the current unsettled situation, the Platte Study emphasis has been to make the analytical techniques available to the next cycle of planning.

A total of 290,000 acres of wilderness, primitive (BLM), and roadless areas are available to provide for wilderness recreation. The roadless areas' capacity to supply wilderness experience is about half of the Basin's share of national needs in the year 2020.

Detailed Analysis

The wilderness concern was central to the construction of a Forestry EQ Alternative Future. It is based on the premise that the Basin should contribute its share of wilderness opportunity to national needs.

Under the alternative future, all roadless areas are used for either wilderness or backcountry recreation. Backcountry recreation is similar to wilderness recreation, except the opportunity for solitude is decreased due to a greater rate of use. The estimated annual capacity of the roadless areas is 31,000 recreation-days of wilderness recreation and 20,000 recreation-days of backcountry recreation.

Since the Platte study started, the Secretary of Agriculture and the Congress requested an accelerated study of the roadless area question. Titled RARE II, second Roadless Area Review Evaluation, this nationwide study is designed to expedite land allocation decisions for wilderness in the context of national need for development, community dependence and minerals. The RARE II process leading to the Administration's Wilderness Proposal looked at the national needs for wilderness and in a national context determined the role particular roadless areas could play. When Congress makes the final allocation, the Basin's share will be established.

Formal designation of the roadless area as wilderness and back-country areas would allow the development of a significant guide and outfitter industry. While the areas have always been there, no prudent businessman would invest heavily to establish a business because the apparent future of the areas was development. With the future availability of these undeveloped areas guaranteed, the investment could be justified.

Project or Program Possibility

The declaration of Wilderness Classification for the National Forest roadless areas is being decided at the national level by Congress.

<u>Flat Water Visual Quality</u>

Although degradation of visual qualities may exist at some of the bodies of water in the Basin, this study effort did not attempt to address the concern.

The Recreation Working Paper touches on the concern by pointing out that during the summer, irrigation water storage reservoirs, particularly the five main stem reservoirs, are drawn down. The resulting appearance of mudflats reduces the visual quality of these reservoirs.

Encroachment of development in the form of cabins, homes, or business establishments on some of the bodies of water in the Basin is considered detrimental by those viewing the lake. Screening with buffer zones of vegetation could reduce the visual quality degradation.

No solution is offered to minimize the visual quality degradation due to reservoir drawdown. Purchase of water to insure a full reservoir through the recreation season would be astronomical and is probably not available because of water rights.

Detailed Analysis

This concern was not quantitatively addressed. The Recreation Working Paper does touch on this concern in relating the concern to reservoir drawdown. The working paper states that this exists at the five reservoirs on the main stem of the North Platte River. At the time the five reservoirs were created, recreation, and fish and wildlife had no sponsors. In the case of the five reservoirs their main purposes are irrigation water storage and hydroelectric power generation.

Since irrigation water storage is one of the main purposes of the reservoirs, it can be expected that toward the end of the irrigation season the water levels in these reservoirs will be low. This can be expected in the case of most irrigation water storage reservoirs. The unsightly appearance of what seems to be expanding

mudflats reduces the attractiveness of the reservoirs for recreation use. Not only in aesthetic terms, but the attractiveness of campgrounds at water's edge is lost for those recreationists that prefer such a setting.

It is unfortunate that the peak of the water-based recreation season coincides with the peak demand for irrigation water. The tradeoffs involved with the aim of keeping the irrigation reservoirs full through the recreation season are numerous. Recreationists who have been, in the past, able to use the irrigation reservoirs at little or no cost themselves would no doubt be unwilling or unable to buy water from the irrigators to insure full reservoirs through the recreation season.

In addition to drawdown of irrigation reservoirs degrading the visual quality of lakes, ponds, and reservoirs of the Basin, another would be the encroachment of development on the perimeter of these areas. The sight of a row of cabins, homes, or business establishments on the edge of a body of water is offensive to some people. Controlling such developments on publicly owned water developments would be easier than on privately owned water developments. Buffer zones of vegetation between the developments and the water edge would be one way to improve the visual quality in situations such as discussed above.

Generally speaking, although the degradation of visual qualities may exist at some of the bodies of water in the Basin, this study effort did not attempt to address the concern.

NED-EQ Ramifications

The NED ramifications would be great if the situations would arise where the irrigation reservoirs would remain full through the recreation season. The visual quality would no doubt improve, but the costs in lost crop production would be monumental. Providing buffer zones of vegetation to screen developments would not have much of a NED effect, but would have a large EQ effect.

Visual qualtiy is one measure of environmental quality of the Basin. Therefore, any time the visual quality is reduced the environmental quality is likewise reduced.

The forestry responsibilities as originally outlined in the Platte Plan of Work were de-emphasized as several over-riding national forestry issues emerged and took precedence. In particular, enactment of the 1976 National Forest Management Act and the second Roadless Area Review and Evaluation (RARE II) have thrown into question the Platte Study's ability to provide a meaningful forestry analysis. The RARE II Final Environmental Impact Statement and the Administration's Wilderness Proposal affects over one-fourth of the National Forest and is awaiting action by Congress. The regulations required by the 1976 National Forest Management Act have just been finalized (September, 1979) and affect the planning process through which National Forest land allocations are to be made. The development of a Regional Plan supplemented by National Forest and state forest resource plans (due in 1983) are not sufficiently developed to provide input to this current effort and this study may not be of substantial help to those planning efforts. The emphasis of the Platte study, then, has been to make the information and analytical techniques available to the next wave of planning.

The remainder of this section discusses the original problems and concerns in the context of the currently unsettled situation.

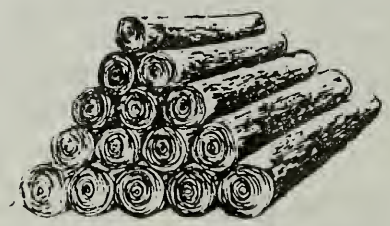
Problems and Concerns

Timber Management Efficiency

Significant mortality in overmature timber stands and stagnation in immature timber stands were identified as a concern. Large areas of commercial forest land are not under intensive management and therefore, are not producing as much as they could. This question was raised by the Medicine Bow National Forest.

Supply Sawmill Capacity

Insufficient timber supply to operate existing sawmills at capacity was a concern identified. The mill can process more than this minimum by increasing the labor or adding extra shifts. There is a maximum capability of the mill to produce products. Sawmill capacity is then defined as the range between the minimum needed for an economical operation and the physical maximum production possible. The concern was raised by the Federal Timber Purchasers Association.



Wilderness/Timber and Mineral Competition

If Congress classifies new areas for wilderness, this will remove areas from the mineral and timber production resource base. Less timber will be available for harvest. How much less will be

determined by the amount and quality of the land being removed from the timber production base. Mining operations can occur on claims made before 1983. After 1983, Wilderness areas will be closed to mineral entry. The concern was raised by the Federal Timber Purchasers Association and the Medicine Bow National Forest.

Location of Concerns

The Medicine Bow National Forest is the major source of timber harvest available in the Basin. The productive federal areas are primarily in the south and west portions of the Basin. State and private forest lands are scattered throughout. Table 1-21 shows the administration or ownership of forest land.

Table 1-21 Administration or Ownership of Forest Land
Platte River Basin, Wyoming

	National Forest	Bureau of Land Management	State	Non-Industrial Private
	1,000 Acres			
Commercial	702	50	34	170
Non-Commercial	10	0	20	163

The Roadless Areas currently under study are dispersed throughout the public lands. Presently there are 26,080 acres of wilderness under Forest Service management and 32,052 acres of Bureau of Land Management Primitive Area in the Basin. In addition, the Forest Service is studying another 235,000 acres of roadless area to determine how much, if any, will become classified as wilderness. In wilderness, timber harvest is prohibited which reduces the possible volume available from the National Forest. However, if timber harvest and the attendent road system occurs the area then is not suitable for wilderness classification.

Basic Cause and Trends of the Concerns

Forest industries in the Basin anticipate a steadily diminishing timber supply available to run their sawmills. They see this as resulting from modification and changes in silvicultural practices, more commercial forest land being reserved for other uses, and areas being withdrawn for wilderness classification.

Timber management touches upon a wide variety of future options. Multiple use and sustained yield has been a key word since the early 1960's. More pressure on the resource base will intensify conflicts.

The continued severity of the existing petroleum shortage will increasingly focus attention on wood fiber as a source of energy. Fuel wood can be either the main product or a by-product of saw-timber production. The use of forests for fuel wood will increase both as a recreation activity and as an economical alternative for energy.

Complexity and Seriousness of the Concerns

The forest products industry ranks as one of the least important sectors of the economy in the Basin as a whole; however, in the small towns and rural areas, particularly Encampment, Centennial, and Saratoga, timber use adds to the towns stability because it is a diversification from agriculture.

The management of the forests in the Basin are very important to other uses. For example, water yields for irrigation purposes helps to support the agricultural base. Management of the forests to maximize multiple use benefits is a complex problem that is to be treated in planning required by the National Forest Management Act regulations.

Analysis of Problems and Concerns

These concerns are brought together because of the incompatibility of some uses on the same acre and the interaction of tradeoffs involved in any land allocation between them. (See Table 1-22).

The demand for timber harvest is a demand for raw material from which building material is manufactured. The national housing goal is met by construction using manufactured building material and lumber. Given the amount of lumber products needed to satisfy the housing demand, the amount of timber harvest needed then becomes a function of the manufacturing process and the economic efficiency of converting raw material into building material. As the manufacturing process becomes more efficient, it may result in less wood wasted and less forest land harvested to achieve the same quantity of lumber production.

As the demand for lumber goes up, the demand can be met in several ways: increase the amount of the same kind of raw material; and/or use raw material currently left; and/or improve the conversion efficiency in manufacturing the products.

In the analysis, several alternative means of providing for adequate and stable timber supplies were investigated. It was assumed that the sawlog component of the demand projections is the most valuable in terms of direct treasury return, jobs provided, and community income. Further, it was assumed that sawlogs would remain the most limiting in relationship to meeting the nation's housing goals, and that current practices of sawing logs into lumber and using lumber in construction would remain about the same.

Table 1-22 TIMBER MANAGEMENT CONCERNS
Platte River Basin, Wyoming

Primary Objective	Concern	Components of Objective: 1st Level Desired Results	2nd Level Actions that can be taken	3rd Level Programs that could be used
NED	TIMBER MANAGEMENT EFFICIENCY. (Units of measure are Thinning and Planting. See 1-30 and Synopsis And Commitments Tables in Appendix B).	Increased and/or more efficient output of forest products.	Increase investment in developing improved management, protection and harvesting methods. Develop forestry cooperatives. Develop genetic improved tree stock. Resolve legal constraints such as property tax. Improved woods utilization. Increase acres that are under intensive management.	ACP cost-sharing, Forestry Incentive Program, Cooperative Forest Management Programs, Cooperative Fire Control Programs, Harvest Improvement Program, project measures, Wyoming State Forester, Federal Land Management, Forestry Cooperatives, Marketing Assistance.
NED	SUPPLY SAWMILL CAPACITY (Unit of measure is Annual Timber Harvest. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Increased and/or more efficient output of forest products.	Increase investment in developing improved management, protection and harvesting methods. Develop forestry cooperatives. Develop genetic improved tree stock. Resolve legal constraints such as property tax. Sawmill improvement. Improved woods utilization. Increase acres that are under intensive management.	ACP cost-sharing, Forestry Incentive Program, Cooperative Forest Management Programs, Cooperative Fire Control Programs, Sawmill Improvement Program, Harvest Improvement Program, RC&D project measures, Wyoming State Forester, Federal Land Management, RARE II Study, Forestry Cooperatives, Marketing Assistance.
EQ	WILDERNESS/TIMBER AND MINERAL COMPETITION (Units of measure are Wilderness Classification and Backcountry Management. See Table 1-30 and Synopsis and Commitments Tables in Appendix B).	Preserve Wilderness	Classify undeveloped roadless areas	RARE II Study. Congressional legislation to classify wilderness areas.

Also investigated was the potential of more sophisticated technology. In this case, trees of physically manageable size would be optimally sawed, peeled, sliced, or chipped, and then reconstituted into lumber, boards, or other building material. Thus, the sawlog raw material package would become antiquated and the emphasis shifts to producing cubic feet of raw material fiber.

A complication in the analysis is the land allocation for Wilderness. The land base can be used to supply timber or provide wilderness, but not both. After Congress decides the Wilderness allocation, a portion of the remaining National Forest land base can be used for timber production and compatible uses. The Wilderness allocation is still in progress under the RARE II project.

The analysis included:

1. Increase investment in timber management, protection, and harvesting methods to provide sawlog raw material.

2. Increase utilization by taking more cull and small material.

3. Combine State, Bureau of Land Management (BLM), and Forest Service into one production unit for harvest scheduling purposes.

4. Increase sustained yield timber harvest on private land by forming forestry cooperatives.

5. Increase processing efficiency at the sawmill.

6. Manage roadless, primitive, and wilderness areas for wilderness and backcountry values.

Timber Management Efficiency

The concern was analyzed using projected amounts of timber needed to be harvested with these amounts distributed to each ownership on the basis of resource capability. Then the most efficient management available was selected to meet the required amounts or limitations for market and nonmarket goods, services, and quality.

Detailed Analysis

OBERS E timber projections were divided into shares for each ownership and each decade on the basis of land capability. Then using net present worth of the direct costs and returns to the landowner as one of several decision criterion, the selection of

the most economically efficent way to meet market and nonmarket projections as well as satisfy environmental constraints including nondeclining timber yields for 240 years was made. Reforestation and several levels of thinning activities are represented in the management strategies available for selection. The Tables (1-23 and 1-24) entitled "Timber Stocking Control (Thinning) Initiated" and "Reforestation (Planting)" represent a summary of the most cost effective treatment schedules needed to produce the flow of timber shown in the figures entitled "Effects of Present Forest Management", "Effects of Alternative Future I", "Effects of National Economic Development Alternative Future", and "Effects of Environmental Quality Alternative Future".

Project or Program Possibility

Federal and state agencies involved in forestry as well as industry and private timber owners make use of several project and program possibilities to increase the wood supply or improve utilization . These include:

1) Investing public funds for timber management on public lands,

2) Investing public funds on private lands,

3) Investing private funds in forestry cooperatives,

4) Cooperative harvest scheduling on public lands,

5) Better utilization, and

6) Investing public funds in tree improvement.

1) Invest public funds in public lands.

There is sufficient federal land base to meet the projected needs. The net present worth amounts for the different alternative futures indicate the relative cost trade-offs. Investments on federal or state lands can single out the best sites for the intensive management.

Bureau of Land Management and Forest Service timber management must compete nationally with other forestry areas and other national programs for funding. To the extent that federal funds are distributed on cost effective criteria, the Basin's federal forest lands can improve their competitive position by specifically locating manageable high quality sites and determining productivity.

Table 1-23 Timber Stocking Control Initiated (Thinning) - Acres Per Decade
Platte River Basin, Wyoming

Ownership	Decade Midpoint	Present Forest Management	NED Alt. Future	Alternative Future I	EQ Alt. Future
National Forest	1980	19,245	32,714	6,430	7,217
	1990	23,939	24,956	16,467	1,075
	2000	11,000	45,593	40,585	-0-
	2010	11,346	53,653	9,269	-0-
	2020	11,000	-0-	10,460	-0-
Bureau of Land Management	1980	-0-	-0-	-0-	-0-
	1990	2,585	3,412	3,412	2,258
	2000	1,663	5,560	5,560	-0-
	2010	-0-	2,120	2,120	-0-
	2020	3,333	4,244	4,244	-0-
Wyoming	1980	895	92	91	-0-
	1990	726	-0-	-0-	937
	2000	150	-0-	-0-	-0-
	2010	-0-	-0-	-0-	-0-
	2020	1,200	1,577	4,398	-0-
Private	1980	400	-0-	-0-	-0-
	1990	500	140	-0-	5,938
	2000	600	-0-	-0-	-0-
	2010	550	-0-	-0-	-0-
	2020	650	4,054	5,767	-0-
TOTAL	all	89,782	178,115	108,804	17,425

Table 1-24 Reforestation (Planting) - Acres Per Decade
Platte River Basin, Wyoming

National Forest	1980	5,100	-0-	-0-	
	1990	-0-	9,026	-0-	None
	2000	-0-	-0-	9,026	
Bureau of Land Mangement	1980		400	400	
	1990	None	-0-	-0-	None
	2000		-0-	-0-	
Wyoming	1980				
	1990	None	None	None	None
	2000				
Private	1980				
	1990				
	2000		None	None	None
TOTAL	all	5,100	9,426	9,426	-0-

Figure 1-35 Effects of Present Forest Management
Platte River Basin, Wyoming

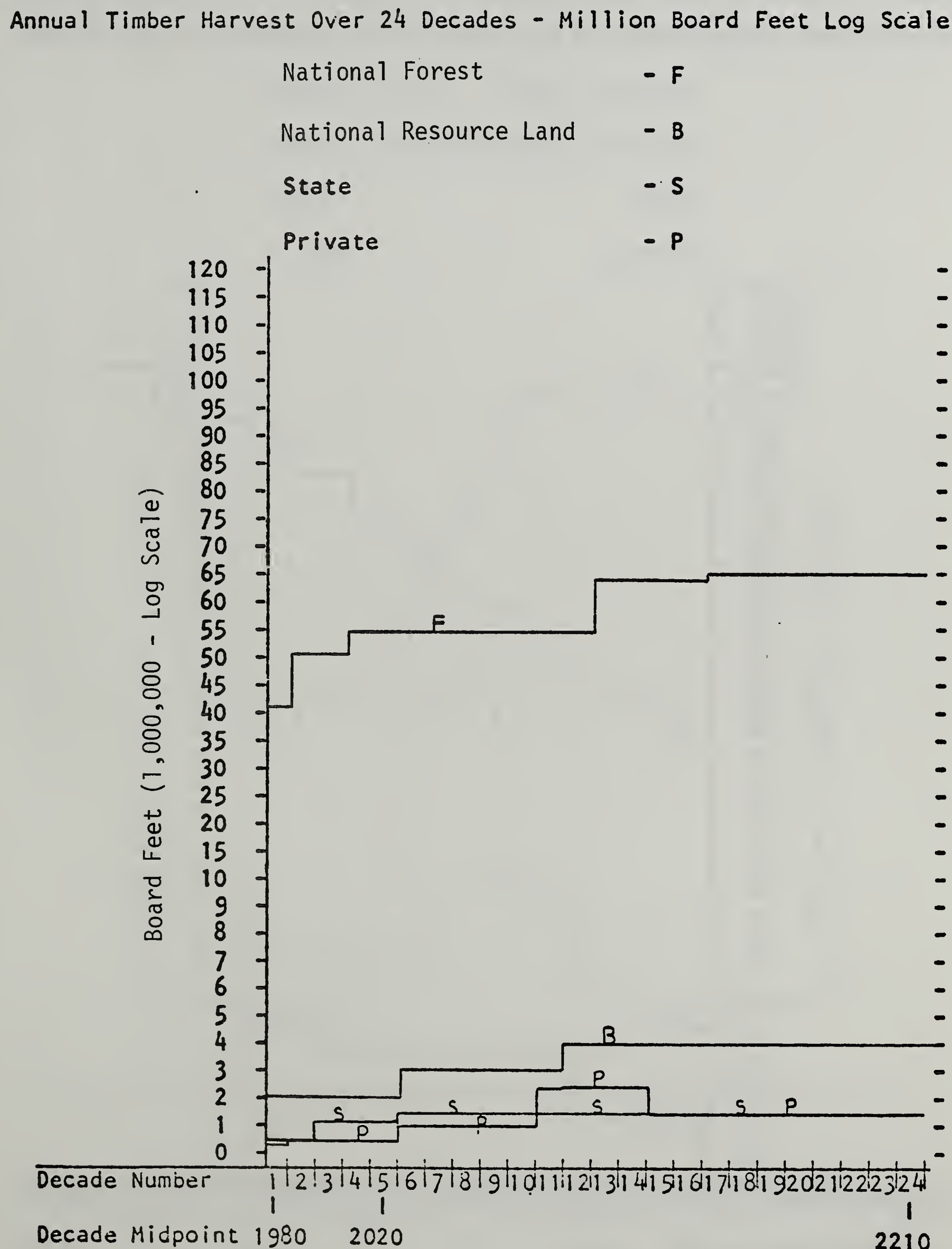


Figure 1-36 Effects of Alternative Future I
Platte River Basin, Wyoming

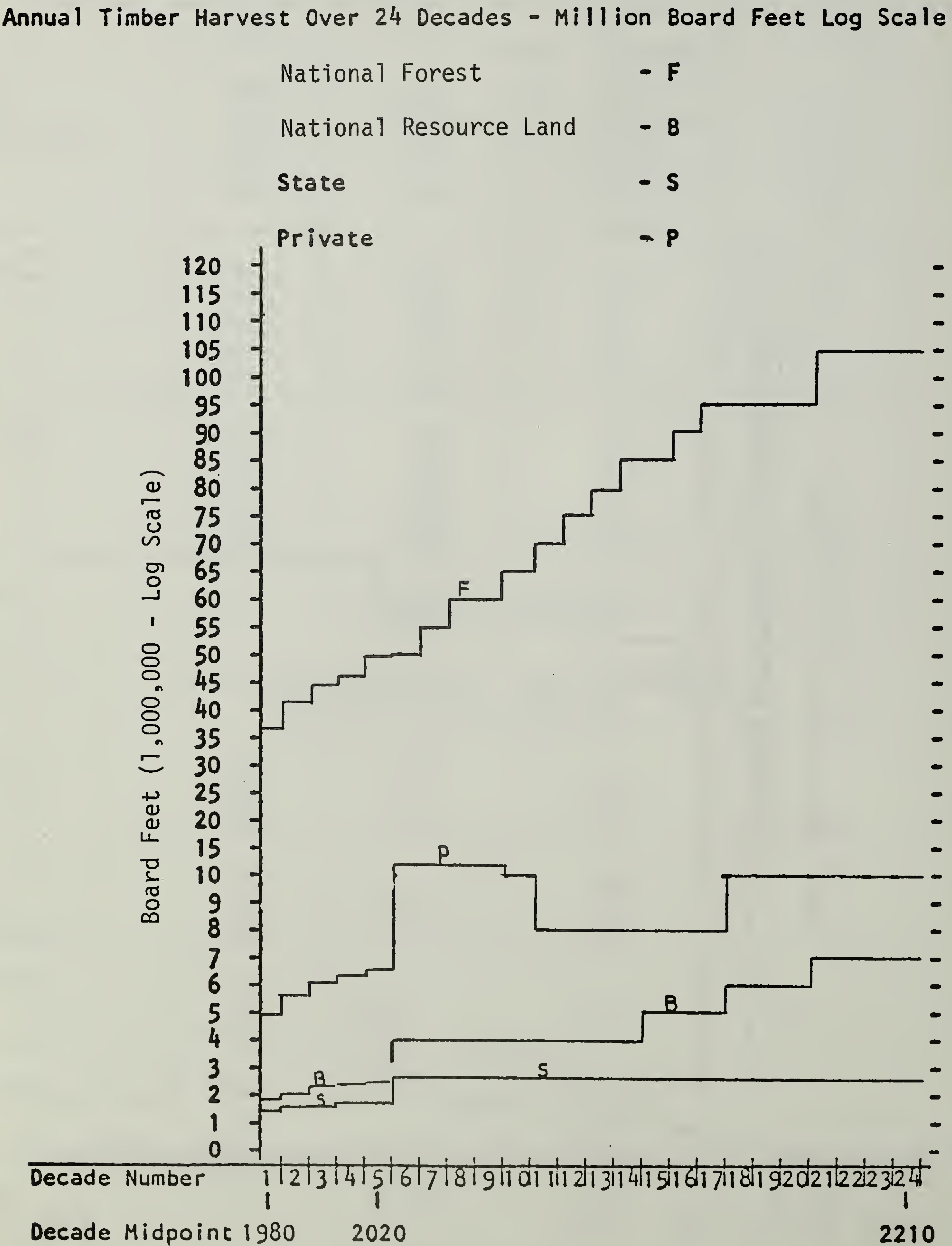


Figure 1-37 Effects of National Economic Development Alternative Future
Platte River Basin, Wyoming

Annual Timber Harvest Over 24 Decades - Million Board Feet Log Scale

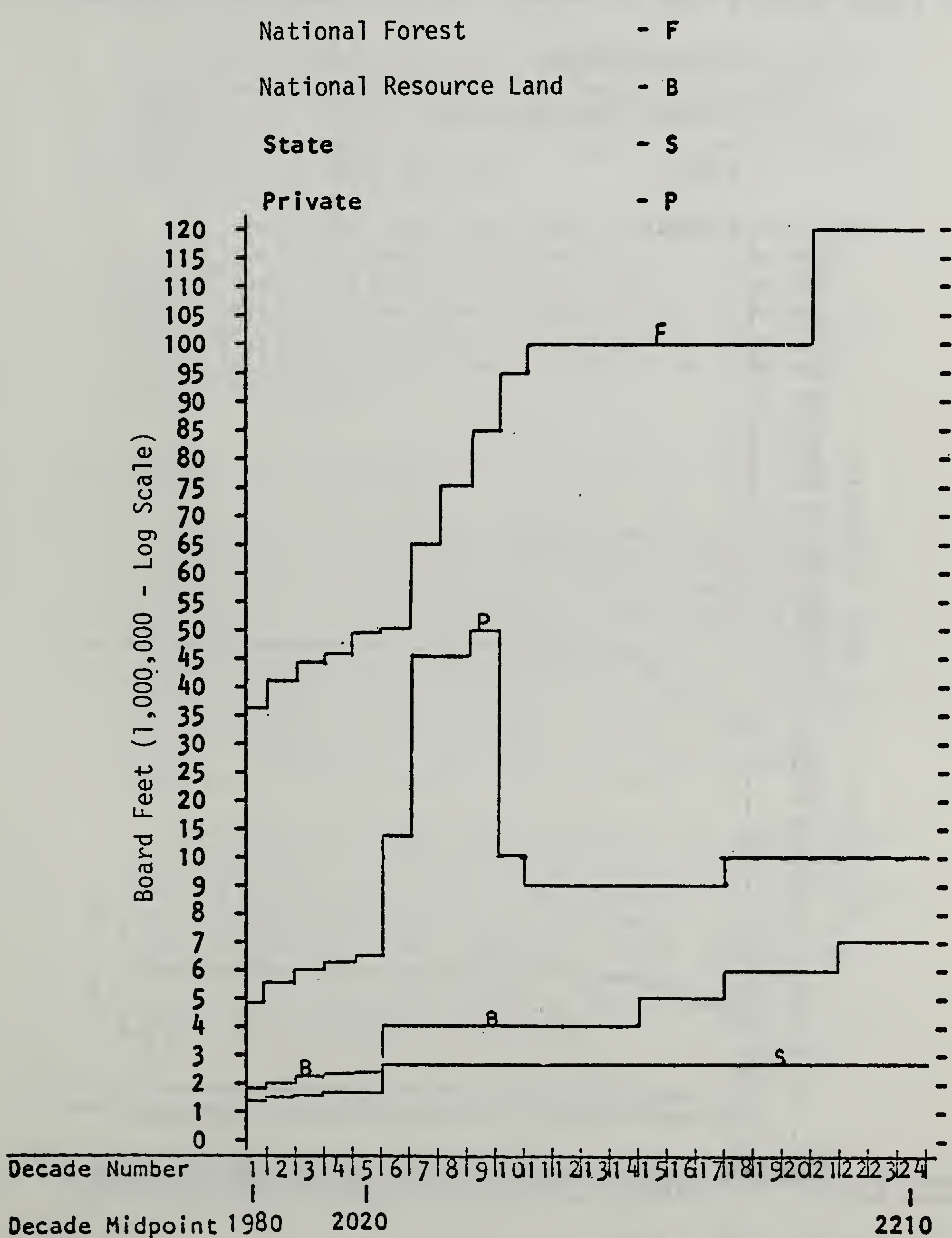
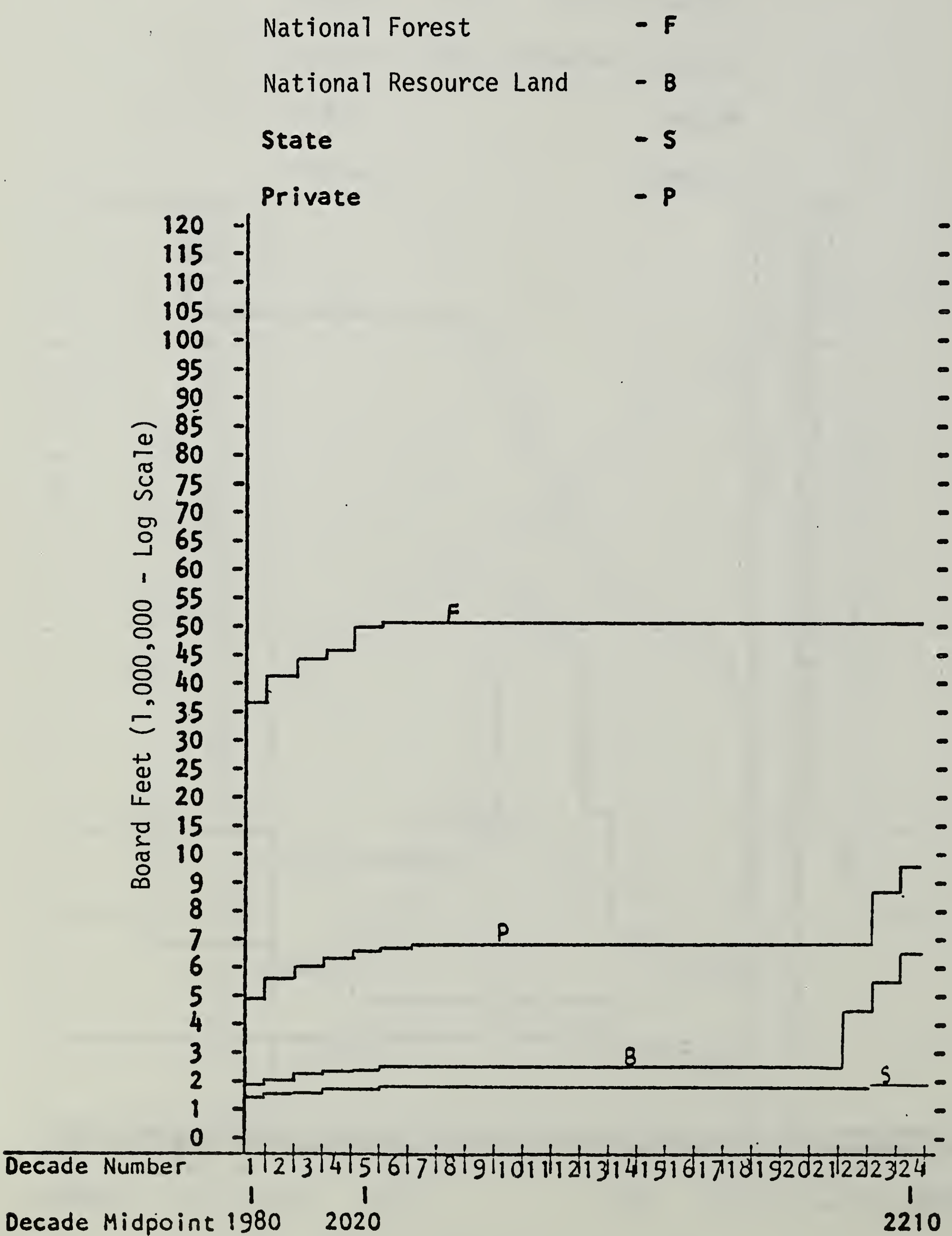


Figure 1-38 Effects of Environmental Quality Alternative Future
Platte River Basin, Wyoming

Annual Timber Harvest Over 24 Decades - Million Board Feet Log Scale



2) Invest Public Funds on Private Lands.

The timber goal of the recommended program required by the Forest and Rangeland Renewable Resources Planning Act of 1974 calls for concentrating public investments in the most productive sites in order to increase the 2020 potential timber yields from non-industrial private lands by 61 to 88 percent over the 1975 production (1975 RPA, pg. 640).

The economic efficiency considerations have been recognized when distribution of Forestry Incentives Program funds (Public Law 93-86) were administratively restricted to sites with growth potential greater than 50 cubic feet per acre per year.

To the extent that cost effective wood production is a criteria for public investment in non-industrial Private land, the Basin's private lands can improve their competitive position by specifically locating the high production sites and earmarking prime forest land. The State Resource Plan due in 1983 can be used as a vehicle to do this.

3) Forestry Cooperatives

Forestry cooperatives are agreements entered into by timber owners and timber purchasers. The agreement arranges for the acquisition of forest management expertise to plan the management of the combined forest land of the members. The objective is to consolidate private holdings into one management so that some portion is available for harvest every year. This gives each landowner an annual income instead of periodic incomes. Investments for timber stand improvement would be similarly shared among the owners.

The objective under the cooperative agreement would be to regenerate the timber stand. The annual income from the cooperative would be an inducement to retain the forest land instead of selling the timber in order to clear the land for other purposes. Other effects would be to improve road construction standards, logging practices, utilization standards, and slash disposal on private land harvesting operations.

4) Government Cooperative Harvest Scheduling

Existing data for the Forest Service, Bureau of Land Management, and State indicates that the age and size of

stands on each ownership is structured in a different way. By combining all the commercial forest land into one management unit for the purpose of harvest scheduling, then potentially the age and size structure of combined stands would more closely approach the balanced age structure of a regulated forest and offer greater sustained yield harvests. If the benefits were sufficient, cooperative agreements would be needed to administer the combined forest.

5) Utilization in the Woods and Sawmill

The objective of improving utilization in the harvest process and at the sawmill is to increase the lumber production from a given supply of logs or to maintain lumber production given a decreasing supply of logs.

There are significant improvements that can be made in some existing sawmills. Table 1-25, "Sawmill Practices - Annual Lumber Production," shows the amount of lumber that can be produced under current, improved, and optimal sawing practices. Improved practices include better control of log length in the woods and in the mill. Also a general tightening of rough lumber tolerances in order to reduce the amount lost in planing. Optimal practices include use of thin kerf saws, precision set works, log scanners, and computers needed to assure the maximum lumber yield from the "best-opening-face" of each log.

Table 1-25 Sawmill Practices - Annual Lumber Production
Million Board Feet Lumber Tally
Platte River Basin, Wyoming

Decade	Sawing Practices: Current	Improved	Optimal
1985	59.4	65.1	77.0
2000	72.9	79.7	94.5
2020	79.6	87.3	103.0

Current utilization programs such as the Harvest Improvement Program and the Sawmill Improvement Program encourage better use of the resources and would potentially result in the enhancement of environmental quality. The improvements require private investment of varying amounts and thus are hindered by what the private investor may preceive as the uncertainty of economically favorable raw material supply. A comprehensive land use plan defining the long range production targets for market and nonmarket goods, services, and quality will not be finalized until sometime after 1981.

6) Tree Improvement Program

For a given timber management activity and site, the tree quality and genetics can make significant difference in the log and lumber yield. There are basically three levels of investment and benefits to be considered.

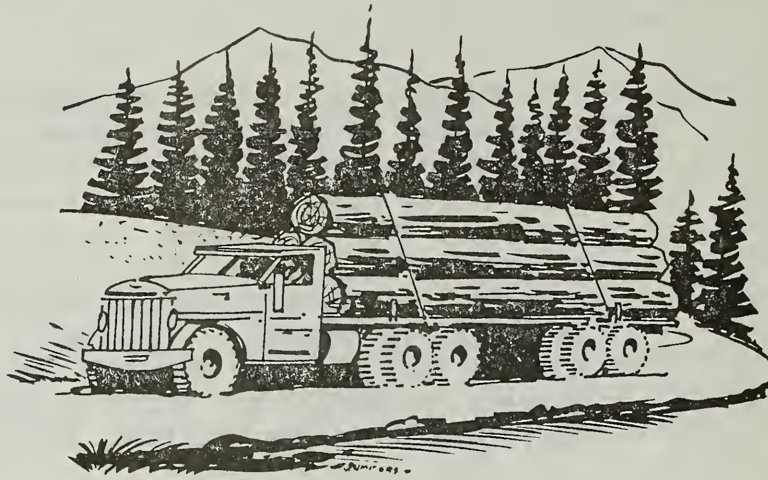
The first level is simply to collect seed from the best looking trees (phenotypically superior) in superior looking stands. Then return the seedlings to similar areas for planting. The establishment and maintenance of seed collection zones is the first step.

The second level of tree improvement carries a higher price tag. It consists of collecting seed or cuttings from phenotypically superior trees for use in establishing seed orchards. Once established, the orchards would produce seed that is the product of matings between phenotypically superior, but genetically untested trees. It would take two decades to obtain seedlings.

The third level is the most costly and has a three decade time lag before genetically superior planting stock would be available. It is the same as the second level except that the genetically poorer trees are removed. The planting stock produced from this orchard would be the product of matings between genetically superior trees.

Supply Sawmill Capacity

The sawmill production in the Basin as demonstrated by inflow of raw material varies from 25 to 40 million board feet (MMBF) per year. It is assumed that this range is between a minimum economic amount to stay in business and the full time single shift physical output. If economically favorable supplies are available, extra shifts could process more than 100 MMBF. Additional equipment could also increase the production capacity.



Detailed Analysis

OBERS E projections for the Basin's share of national needs were used to analyze both the concern of a sawmill capacity and the concern for integrated land management planning. The projections used are thought to be in the range above the minimum level needed to sustain a healthy, dependent industry and below maximum physical sawmill output.

NED and EQ Ramifications

The production of timber products has a beneficial effect in the community in terms of economic stability and employment. Each MMBF sent to a sawmill has an effect on the community of $168,000. Table 1-26 shows the effects associated with meeting the timber projections annually.

Table 1-26 Community Effects of Timber Production
Platte River Basin, Wyoming

Decade	Annual MMBF	Community Effect $1,000
1976-1985	44	7,392
1986-1995	50	8,400
1996-2005	54	9,072
2006-2015	57	9,576
2016-2025	59	9,912

Project or Program Possibility

Private lands contain 170 thousand acres of the Basin's commercial forest land. This is 18 percent of the total available. Professional forestry advice and assistance is available to landowners from the Wyoming State Forestry Division in cooperation with the U.S. Forest Service.

The Harvest and Sawmill Improvement Programs concentrate on improving sawing techniques and production controls. Analyses are made of harvesting operations to improve log making. Mill operators are offered help in secondary processing problems, and in preventing insect and disease damage during processing and storage of logs and wood products. Advice is given on classifying and grading to get the most valuable product for each log, and on the use of residues.

Wilderness/Timber and Mineral Competition

The quantitative analysis of wilderness classification in competition with timber and mineral production reflects the state-of-the-art and status of land use plans of 1975. It does not properly evaluate the current Administration's Wilderness Proposal nor does it reflect what Congress might reasonably be expected to do. The quantitative analysis presented in this study can only be suggestive but does represent the right order of magnitude of effects and impacts.

The total of 290 thousand acres of wilderness, primitive (BLM), and roadless areas (as defined in 1975) can be committed to wilderness classification without jeopardizing the Basin's capacity to provide its share of the national timber demand. Figure 1-37 indicates the capacity of the Basin to respond to the 50-year projections and to maximize timber harvest on National Forest areas outside potential and existing Wilderness areas.

The National Forest lands alone have sustained yield capacities for timber production that approach 100 MMBF annually. One purpose of the National Forest Management Act is to provide a nationally consistent planning process for determinining how National Forest lands are to be used and the production levels of each of the variety of multiple uses. Mineral development and wilderness competition will be studied throughly in the National Forest plans due in 1983. The 1964 Wilderness Classfication Act identifies mining as an acceptable use in the wilderness on legal claims made before 1983. The mineral potential of roadless areas was a major concern in the RARE II study and will be of continued importance in deciding land allocations in the National Forest plans.

The capacity of the Basin to contribute to the national share of Wilderness Experience is discussed in the Recreation Concerns.

LAND USE PLANNING PROCESS GROUP

NOTE: This is a group of concerns or "what if" situations that were addressed as a result of the analytical tools developed in the course of this study.

Problems and Concerns

Surface Water Use Competition

The competition for developed surface water supplies between agricultural users and nonagricultural users is a concern in the Basin. With rapid expansion of the energy industry within or near the Basin, more demands are being placed on existing water supplies. These demands are not only from industry, but also from municipalities.

This was identified by several Conservation Districts; North Platte Citizens Committee; and industrial representatives.

Court Decree

The North Platte River Decree of 1945 and its effect on Wyoming water needs was identified as a concern. The Court Decree specifies the amount of water and land that can be irrigated in the North Platte Decree area (see synopsis of North Platte Court Decree in Group 2 - Water Management Group page 1-33). The limitation on the land area may cause poor use of the water resources. The problem was to show tradeoffs that take place when water is put to differing uses for different goals. How does the court decree affect the Basin's ability to produce its national and regional share of food, fiber, goods and services? This concern was identified by several Conservation Districts in the Basin.

Transbasin Diversion

Transbasin diversion of water not only within Wyoming, but also from out-of-state locations was identified as a concern. With the demand for water increasing from agriculture, municipalities, and industry the feasibility of importing water from some river basins in the state was brought up. In particular, the Green River was singled out as a possible contributor to the Platte Basin. This concern was surfaced by industrial representatives.

National Share of Timber Needs

Current level of timber management may not allow the Basin's resources to contribute their share of the Nation's future needs. National share is commonly projected as sawtimber and roundwood products available for a sawmill or other primary manufacturer.

Existing forest land management on all ownerships in the Basin may not produce enough wood to meet the projected demands. This concern was identified by the Medicine Bow National Forest and the Federal Timber Purchasers Association.

Integrate Land Use Planning

This concern is more a guiding principle than a resource problem. People in the Basin have been requested to assist different planning agencies with their planning. Frequently the same people go to different meetings and come away with feelings of frustration at the inability of planners to coordinate their planning. Innumerable comments, questions, and requests have touched upon the needs for integrated planning.

The Wyoming Water Planning program, of Wyoming State Engineer's Office at the time this study was conceived, requested that steps be taken to aid the state in the process of integrating other federal and state opportunities with those of the U.S. Department of Agriculture.

In addition, the study was guided by the fact that no selected USDA program plan would be developed. Instead, a series of alternative futures would be analyzed with each future displaying impacts, trade-offs, and resource commitments.

Location of Concerns

Concerns in the land use planning group have ramifications throughout the entire Basin and in the case of transbasin diversions, in adjacent basins. Quantification of the concerns is next to impossible because of the many options or mixes available.

The North Platte River Court Decree would be expected to affect the area within the boundaries as defined in the decree. However, events occurring in the decree area have pronounced effects on areas not within the decree area. Transbasin diversions could be expected to affect areas adjacent to the main stem of the North Platte River and timber needs could be expected to affect areas where commercial timber is produced.

Basic Cause and Trends of the Concerns

The planning process is a very complex operation. As more planning tools become available, complex problems can be addressed to a higher degree.

Complexity and Seriousness of the Concerns

To do justice to broad base planning, analytical tools that analyze tradeoffs within areas were used in this study and will be needed for future analysis. Also these same tools will need

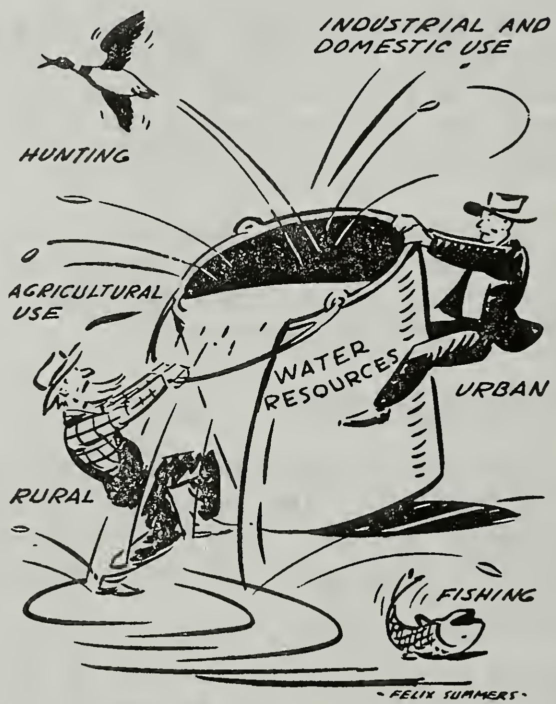
to be responsive to integration of planning elements from many planning sources.

Analysis of the Problems and Concerns

The integrate land use planning group is made up of five individual concerns that have national economic development as their primary objective. Integration of land use planning could have both NED and EQ as primary objectives. These concerns are highlighted here because of the information developed during the course of the study.

Surface Water Use Competition

This concern was analyzed using Alternative Future III. Competition was simulated using irrigation water to fulfill anticipated water requirements for planned power generation. The reduction in irrigation water supplies has a very minor effect on the Basin. Total net revenue, production cost, labor requirements, and total irrigated acres decrease slightly. Environmental parameters are not significantly affected.



Detailed Analysis

In the analysis, the non-agricultural use is the industrial use of surface water for the Laramie River Station and for the Wyoming Coal Gas (Power Plant at Douglas). The Laramie River Station (22,500 acre-feet) is assumed to be in operation in years 1985, 2000, and 2020 and the Wyoming Coal Gas (15,000 acre-feet) in years 2000 and 2020. However, the two projects are analyzed simultaneously. Note that the 37,500 acre-feet is about 6 percent of the average annual irrigation water consumptive use of 580,200 acre-feet.

Analysis is made for the years 1985, 2000, and 2020. The effects of water depletion on agricultural irrigation water supplies is shown for selected parameters graphically on Figures 1-39 to 1-41. The graphs are designed to show magnitude and direction of change rather than absolute values. The Alternative Future I is defined to be equal to 1.0. The index (percentage) then indicates the variance of Alternative Future III from Alternative Future I.

The total Basinwide effects of reduced irrigation water supply are very minimal. Total net revenue, production cost and labor requirements decrease less than one percent in all three time periods.

Total irrigated acres decrease in each of the three time frames. Irrigation from ground water with a sprinkler system is not affected by the reduction in water supply, but there is a small shift from surface source-surface system irrigation to surface source-sprinkler system irrigation. This is indicative of an attempt to stretch a reduced water supply by means of a more water use efficient system. There is also a decrease in irrigation return flows. The acreage of irrigation with short water supply is unchanged in the years 1985 and 2000, but increases slightly in the year 2020.

There is no significant effect on soil erosion, the type of tillage systems used, or the type of conservation practice followed. Crop production is similarly affected with only three crops showing any change. Corn silage production increases only slightly while native hay-pasture and sugar beet production decreases slightly.

The effect of reduced agricultural water supply on big game habitat is very minimal. The largest change is a slight increase in elk habitat in the year 2000.

The above discussion has been concerned mainly with the effects at the Basin level. Within certain areas or watershed groups of the Basin, the effects will be greater. Net revenue and labor requirements may affect individual operators beyond their ability to survive financially. At the same time, production costs changes may imply changes in inputs that would require a significant change in the related agribusiness sector.

An example of this occurs in the year 2000 in Watershed Group 28, (see Watershed Group Map page 1-6) where 1,360 acre-feet of the available water is taken for the Laramie River Station. The acreage in the six year rotation of sugar beets-corn silage-oats-3 years alfalfa decreases from 247 acres in Alternative Future I to 110 acres in Alternative Future III. The difference in acreage is replaced by continuous native hay and idle cropland. Other rotations in the watershed group are similarly affected.

NED-EQ Ramifications

The NED ramifications of a reduced water supply for agricultural irrigation due to the Laramie River Station and the Power Plant at Douglas are insignificant for the Basin. Total net revenue, production cost and labor requirements all decrease less than one percent. Crop production is unchanged with only native hay-pasture and sugar beet production showing any decline. As more water is required for non-agricultural uses the impact on agriculture can be expected to rise.

THESE GRAPHS SHOW THE RELATIONSHIP BETWEEN SURFACE WATER AND COMPETITION BY AGRICULTURAL AND NONAGRICULTURAL USERS AND SELECTED ITEMS, YEARS 1985, 2000, AND 2020. THIS SAME RELATIONSHIP BETWEEN THE BASELINE ALTERNATIVE IS BASIS FOR COMPARISON.

SURFACE WATER USE COMPETITION

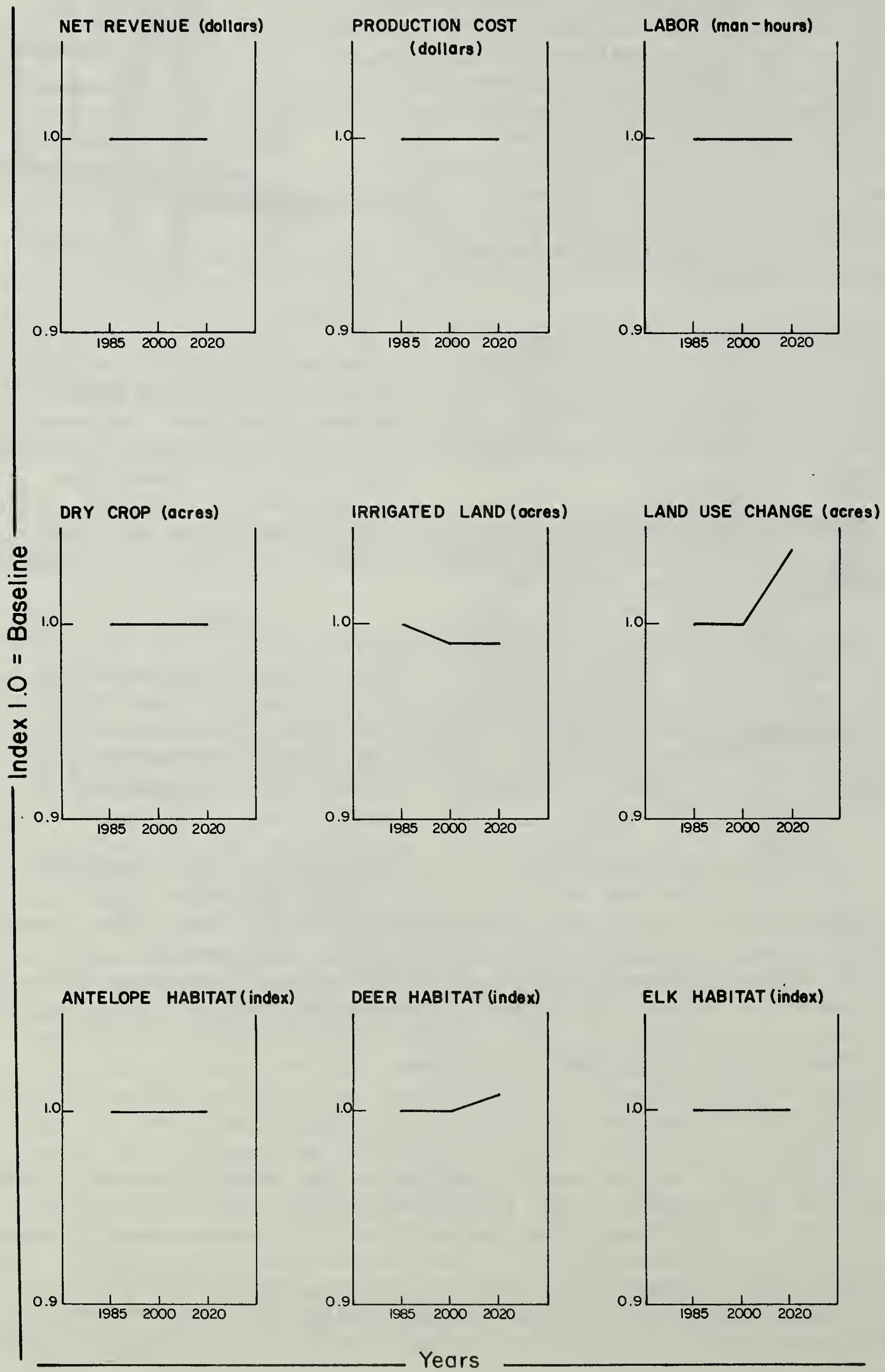


FIGURE 1-39

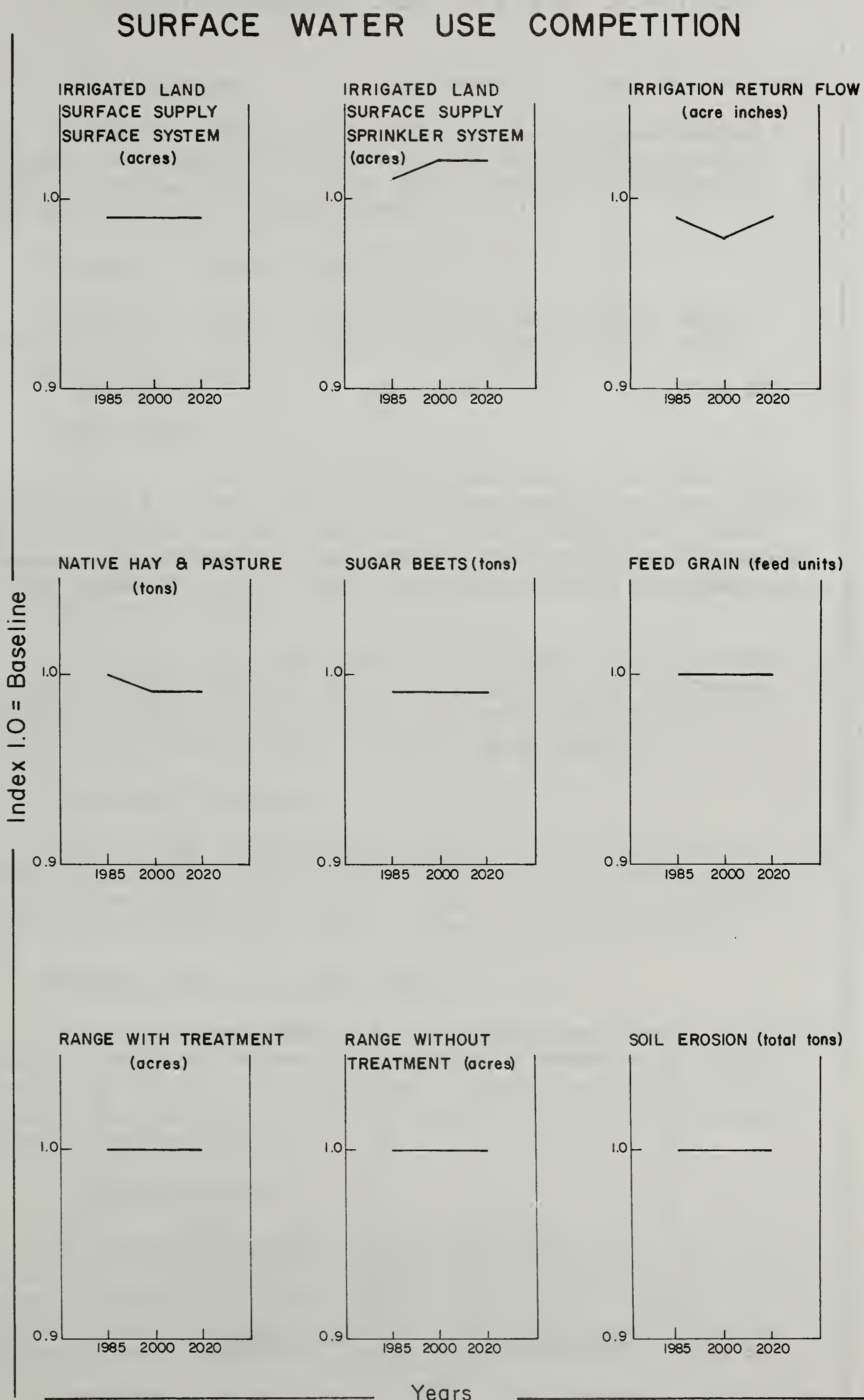

SURFACE WATER USE COMPETITION
IRRIGATED LAND SURFACE SUPPLY SURFACE SYSTEM (acres)
IRRIGATED LAND SURFACE SUPPLY SPRINKLER SYSTEM (acres)
IRRIGATION RETURN FLOW (acre inches)
NATIVE HAY & PASTURE (tons)
SUGAR BEETS (tons)
FEED GRAIN (feed units)
RANGE WITH TREATMENT (acres)
RANGE WITHOUT TREATMENT (acres)
SOIL EROSION (total tons)
1.0
0.9
1985
2000
2020
Index 1.0 = Baseline
Years

FIGURE 1-40

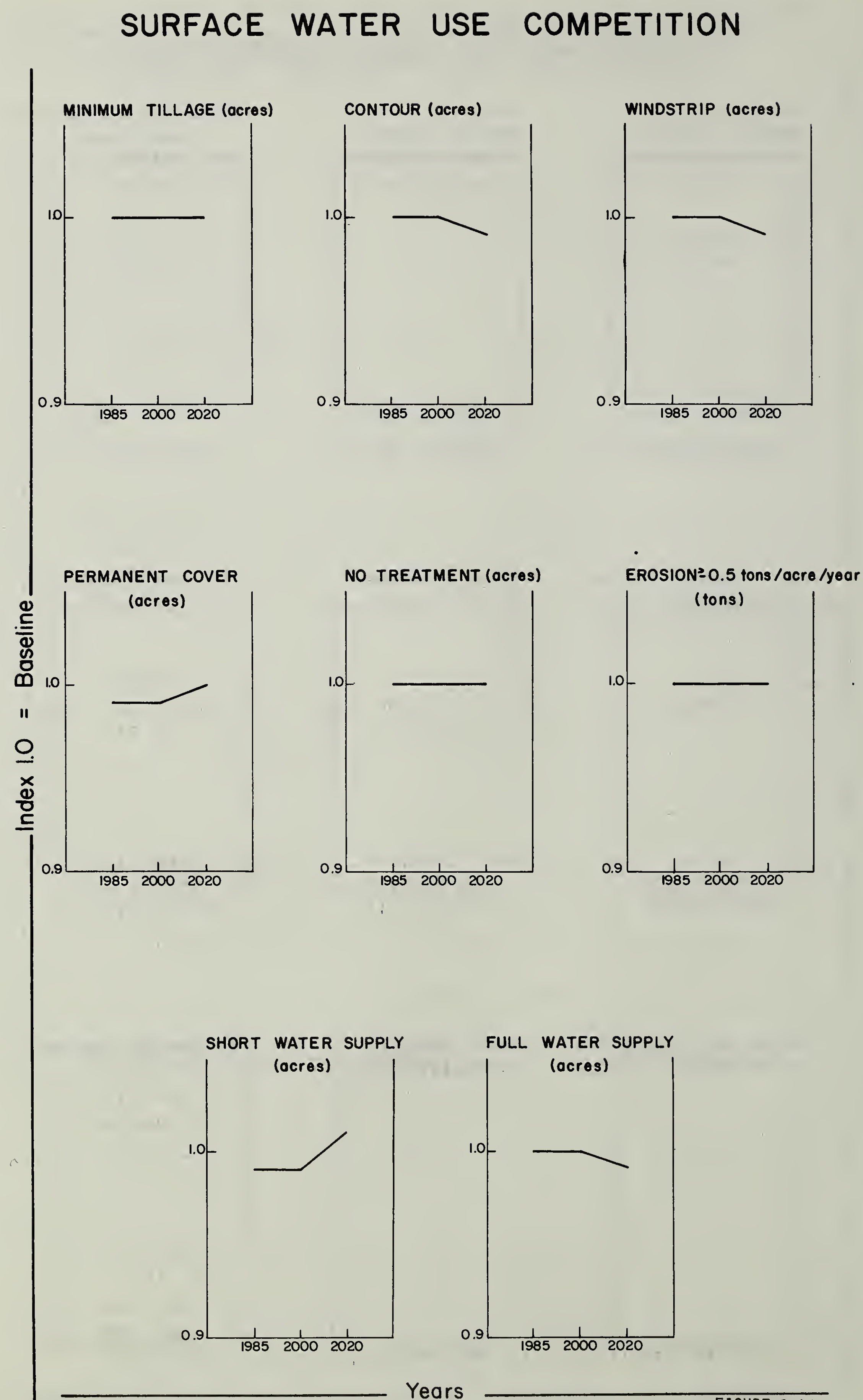

SURFACE WATER USE COMPETITION
MINIMUM TILLAGE (acres)
CONTOUR (acres)
WINDSTRIP (acres)
PERMANENT COVER (acres)
NO TREATMENT (acres)
EROSION≥0.5 tons/acre/year (tons)
SHORT WATER SUPPLY (acres)
FULL WATER SUPPLY (acres)
1.0
0.9
1985
2000
2020
Index 1.0 = Baseline
Years

FIGURE 1-41

The EQ ramifications, as reflected in big game habitat indices, the amount of soil erosion at annual rates greater than 0.5 ton per acre, and the annual total soil erosion in the basin, are all insignificant.

Project or Program Possibility

The Basin's total effects indicate very little impact from the reduced water supply. Thus project action appears to not be necessary.

Court Decree

This concern was not directly addressed in the analysis. However, each of the alternative futures shows the acres needed to be irrigated to meet the goals of the alternative future. They show the irrigated acres within the boundary of the North Platte Court Decree area that are needed to meet the goals of the alternative future.

Table 1-27 shows the number of irrigated acres required to meet the goals of the alternative futures. It should be noted that none of the alternatives require the full use of the acres available within the decree area boundary.

Transbasin Diversion

This concern is analyzed in Group 2 - Water Management - under the concern relating to irrigation water development. Alternative Future IV is used to show the effects of importing Green River Basin water into the North Platte River Basin.

National Share of Timber Needs

All alternative futures are capable of meeting the projected national share and reaching a maximum sustained yield annual harvest of 125 million board feet. The NED and EQ Alternative Futures have maximums of 140 and 68 million board feet annual harvest, respectively.

Detailed Analysis

Assumptions of demands from OBERS projections were used as targets. The amount of timber that the Basin's 955 thousand acres of commercial forest land would supply as its share of national demand is shown in Table 1-28. Table 1-29 shows the distribution of commercial forest land ownership.

Table 1-27 IRRIGATED ACRES FOR ALTERNATIVE FUTURES YEAR 2020
Platte River Basin, Wyoming

Alternative Future	Total Irrigated Acres Required 1,000 Acres	Decree Area Irrigated Acres Required 1,000 Acres	Outside Decree Irrigated Area Acres 1,000 Acres	Total Irrigated Acres Available 1,000 Acres
I OBERS - Crop Production	227	43	184	674
II OBERS - No Return Flow Reduction	227	43	184	674
II OBERS - 50% Return Flow Reduction	229	43	186	674
II OBERS - 75% Return Flow Reduction	200	29	171	674
II OBERS - 100% Return Flow Reduction	153	0	153	674
III OBERS - Municipal & Industrial Water	226	43	183	674
IV Maximum Agricultural Production-No Return Flow Reduction	251	41	210	674
IV Maximum Agricultural Production-50% Return Flow Reduction	256	43	213	674
IV Maximum Agricultural Production-75% Return Flow Reduction	248	35	213	674
IV Maximum Agricultural Production-100% Return Flow Reduction	224	19	205	674
V OBERS - 50% Imported Irrigation Water	263	44	219	674
V OBERS - 100% Imported Irrigation Water	298	44	254	674
V OBERS - No Limit Imported Irrigation Water	438	0	438	674
VI OBERS-Municipal & Industrial-Import Water-Drought	209	33	176	674
NED Maximum Agricultural Production-No Project Development	301	55	246	674
NED Maximum Agricultural Production-Project Development in NP Decree Area	321	75	246	674
NED Maximum Agricultural Production-Project Development Outside NP Decree Area	344	56	288	674
NED Maximum Agricultural Production-Project Development	363	75	288	674
EQ 10% Soil Erosion Reduction	225	43	182	674
EQ 20% Soil Erosion Reduction	225	43	182	674
EQ 30% Soil Erosion Reduction	226	43	183	674

Table 1-28 National Share of Timber Needs
Million Board Feet of Sawtimber Annually
Platte River Basin, Wyoming

Decade	1976-85	1986-95	1996-05	2006-15	2016-25
MMBF	44	50	54	57	59

Table 1-29 Ownership Commercial Forest Land
Platte River Basin, Wyoming

National Forest	BLM	State	Private
82%	4%	3%	11%

Currently the National Forest is producing about 93 percent of the Basin's timber harvest.

NED and EQ Ramifications

The Alternative Future that emphasizes national economic development on forest lands produces high levels of timber in the future and this requires investment in reforestation and timber stand improvement now. It treats 33,000 acres now with a net present worth of $-18.8 million. Reserved wilderness and backcountry areas are 63,000 and 48,000 acres for a total of 111,000 acres.

The Alternative Future that places emphasis on environmental quality on forest lands meets the demand for timber, but does not increase harvest above the demand level unless there is an improvement in the environmental quality indexes. In the alternative there is a lower investment in reforestation and timber stand improvement. The Alternative Future net present worth is $-6.9 million. Reserved wilderness and backcountry areas are 178,000 and 112,000 acres for a total of 290,000 acres.

The analysis shows a large area of complementarity between the Alternative Futures; namely, the timber projections can be met and retain the maximum amounts of wilderness and backcountry recreation. The Alternative Futures invest in reforestation and timber stand improvement on 6,900 acres with a resulting net present worth of $-5.2 million. Reserved wilderness and backcountry areas are 164,000 and 126,000 acres.

Existing timber management plans exceed the Basin's share for four decades then drop below the projection. A maximum high of 72 million board feet annual harvest is reached with a required investment in 25,600 acres of reforestation and timber stand improvement. The resulting net present worth is $-11.6 million. Reserved wilderness and backcountry are 104,000 and 126,000 acres.

Project or Program Possibility

Forest management practices on state and private lands can be increased. These lands contain 14 percent of the productive capability yet currently yield only 2 percent of the annual harvest. The State Forest Resource Plan is being developed at this time. The level of program contribution will be determined and coordinated with other agencies and the Forest and Range Resources Planning Act (RPA) for 1980.

Integrate Land Use Planning

The study developed a computer oriented process that includes site specific inventories, agricultural and forestry resource allocation models, and analysis of economic, employment, and population impacts. The objective behind this systems approach is to rapidly develop quantitative information for new alternatives.

The information about goals, demands, constraints, and impacts concerning a particular alternative future is brought together in a display of six basic tables:

Synopsis and Commitments for Alternative Future

Effects of Alternative Future

National Economic Development Account

Environmental Quality Account

Regional Development Account

Social Well-Being Account

Detailed Analysis

Laws that govern planning efforts specify objectives for both economic development and maintaining environmental quality. As more public agency resources are used for planning and implementation, both short and long term commitments are made. To the extent possible, future options for resource use should be kept open. Better decisions require responsive analysis and pertinent information.

The Platte Study emphasizes the use of analytical tools and displays that measure the outputs, impacts, commitments, and loss

in future options associated with each alternative future. The process is capable of recycling new alternatives inexpensively and on short notice.

Planners need to include a way to exchange information. Training sessions and conferences would be productive for this exchange.

Planners and persons interested in looking at other alternative futures similarly need a systematic way of information exchange. The display of six basic tables present study findings and includes environmental as well as economic measures. The displays are intended to present a comprehensive summary of an alternative. Using a much shorter list of indicators might either oversimplify the tradeoffs or distort the meaning or balance of tradeoffs. Where short summaries are appropriate, an item or two can be worked into a narrative statement suitable for the particular interest.

NED - EQ Ramifications

A problem faced during the study was defining the items for display. Presenting adequate balance and usable information for economic development, environmental quality, and social well-being issues was a primary task. The result is a balanced set of measures based upon legislation and tabulated in one of the four WRC accounts. The tradeoffs associated with particular alternatives can be compared systematically since all alternatives have the same set of tables.

Project or Program Possibility

In the sense of integrated land use planning, the project or program possibility relates to the use of the Platte analysis procedure to help define state and local alternatives. Adequate public review and response to alternatives improves the structure and understanding of new alternatives. There are five basic kinds of action possible:

1) Maximum effort at getting federal and state agencies and public groups together to improve upon existing long range plans.

2) An effort at getting USDA agencies to integrate programs with each other.

3) An effort at getting USDA agencies and appropriate state planning agencies to integrate planning programs.

4) An effort at getting an agency to integrate its own planning programs.

5) A fifth kind of action is no action.

The first four of these actions imply a level of commitment to honor the results and to improve on the existing system by upgrading data bases, improving analysis techniques and improving the definition of expected results.

Summary of Problems and Concerns Analyzed

Table 1-30, "Resource Problems or Concerns Table" shows the Platte Basin concerns that were analyzed. It shows the unit of measure that is used to measure the effect a particular alternative future has on the concern.

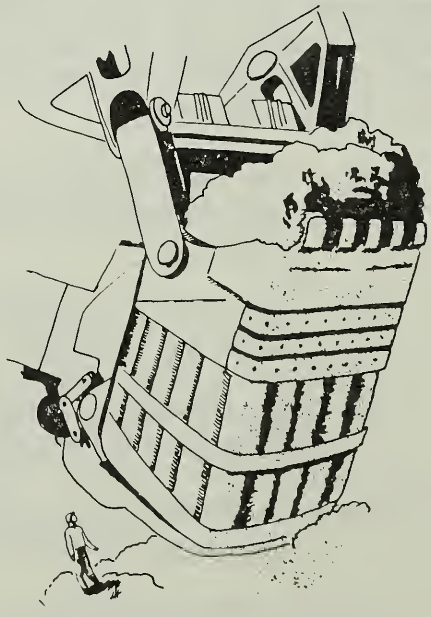
For example, the irrigation efficiency concern (Group 2 - Water Management Group) is measured using the acres of increased irrigation efficiency required to meet the goals of a particular alternative future. At the same time the erosion and sedimentation concern (Group 1 - Water, Air, Land Quality Group) is measured using three parameters: Annual tons of soil erosion due to water; acres with conservation land treatment; and acres of proper land use change.

This table is used in conjunction with the alternative future displays used in Chapter 2. The individual concerns are discussed earlier in this chapter. Table 1-30 shows page number where the individual concern discussion begins.

CONCERNS NOT ADDRESSED

During the course of problem and concern identification, several concerns were surfaced, but not addressed in this study. These were not addressed mainly because they did not fall within the general framework or scope of the study. The following are those concerns not addressed or analyzed.

Ownership



The question of absentee land ownership was raised. This was taken to mean that corporations are buying up small ranches for investment and combining them into bigger operations. The fear is that the absenteeism will deteriorate the local economy. The Saratoga Valley was mentioned specifically.

Export Coal Resources

Export of nonrenewable resources for processing in order to reduce the influx of population was raised. Population projections made by the Wyoming Water Planning Program take into account the anticipated energy development.

Table 1-30 Resource Problems or Concerns Table
Platte River Basin, Wyoming

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit	Main Report Location Page
Water Quality			1-4
	1. Irrigation Return Flows	AcFt	
	2. Acres with Return Flows	Acre	
Erosion and Sedimentation			1-4
	3. Water Erosion Annal Total	Tons	
	4. Conservation Land Treatment	Acre	
	5. Proper Land Use Change	Acre	
Irrigation Efficiency			1-26
	6. Increased Irrgtn Efficiency	Acre	
Irrigation Water Development			1-26
	7. Full Water Supply - Irrgted	Acre	
Flood Protection			1-27
	8. Agricultural Flooding	Acre	
Zero Discharge			1-28
	9. Zero Discharge Systems	Acre	
Rangeland Use			1-68
	10. Rangeland w/ Added Treatmt	Acre	
Big Game Competition			1-68
	11. Non-Critical Area BG Use	AUM	
Winter Range Production			1-82
	12. Critical Area Imprvd Rng Mgt	Acre	
	13. Critical Area Big Game Use	AUM	
Fish Habitat			1-82
	14. Water Erosn Over 0.5 t/a/y	Acre	
Rare, Threatened, and Endangered Species			1-82
	15. Protected Aquatic Habitat	Mile	
	16. Protected Terrestrial Habt	Acre	
Water Recreation Use			1-92
	17. Boat, Swim, Water Skiing	RD	
Public Access			1-93
	18. Guaranteed Fishing Access	RD	
	19. Guaranteed Hunting Access	RD	
Wilderness Areas			1-93
	20. Wilderness Classification	Acre	
	21. Backcountry Management	Acre	
Flat Water Visual Quality			1-93
	22. Restricted Drawdown	Acre	
Supply Sawmill Capacity			1-104
	23. Annual Timber Harvest	MBF	
Timber Management Efficiency			1-104
	24. Thinning and Planting	Acre	

Kendrick Project

The questions of feasibility and water supply for extension of the existing Kendrick Irrigation Project were raised by the Casper-Alcova Conservation District. When first planned, 66,000 acres were identified as being feasible to irrigate. To date 24,265 acres have been developed.

This concern is not treated as an individual project area. The analytical process used in the study is designed to look at all potential areas and identify the most efficient at meeting the needs.

Slurry

The effects of slurry pipelines on ground water was identified as a concern. This concern, expressed by the Niobrara Conservation District, has to do with the anticipated effect of using Basin ground water for slurry pipelines. Will the ground water be mined? Will other users of that ground water be adversely affected?

To the extent that ground water allocations go to a slurry pipeline, the effects on irrigated agriculture can be determined by looking at the reduced amounts available to agriculture. The effect of the slurry pipeline(s) on the ground water supply is beyond the scope of this study.

Seminoe Reservoir

Concerns were identified regarding the U. S. Department of Interior, Bureau of Reclamation study of possible enlargement of Seminoe Reservoir on the main stem of the North Platte River. The main purpose of the study was to determine the feasibility of enlargement. Items considered in determining the feasibility included flood control, additional irrigation and/or industrial storage, hydroelectric power generation, and minimum river flows for fish habitat. Concerns were about resource inundation at the reservoir and effects on individual agricultural landowners.

Water Rights

A concern was identified relating to water rights and water ownership conflicts. The concern stated that there appears to be a conflict about who owns the water within the State of Wyoming and more particularly who owns the water that originates on National Forest lands. Water rights questions are legal problems that are currently being studied by the State of Wyoming.

Big Game Migration

Wide, high speed highways interfere with wildlife migration. Management systems are needed to minimize effects of highways on big game migration routes.

Design criteria for the construction of highways is not under the jurisdiction of the USDA. Agencies responsible for highway design are aware of this concern and are trying to design means to solve the problem in cooperation with the Wyoming Game and Fish Department.

Recreation Facility Distribution

Distribution of recreation facilities causes overcrowding in some areas. Some areas, because of the recreation opportunities or because of proximity to large population centers, experience overcrowding during peak periods of the recreation season while other facilities are vastly underused.

The Recreation Working Paper indicates a need to develop facilities for the Basin as a whole. This need ranges from boat ramps and camping units to golf courses and municipal parks.

CHAPTER 2

ALTERNATIVE FUTURES

CHAPTER 2

A L T E R N A T I V E   F U T U R E S

INTRODUCTION

As mentioned in the Land Use Planning Process Group in Chapter 1, a selected USDA Program plan for water resources development was not constructed. Instead, a group of alternative futures were analyzed. This chapter will display the eight major alternative futures used. Variations of the eight major alternative futures were used in some detailed analysis and can be found in Appendix B of this report.

The Wyoming State Engineer's Office has the responsibility to interact with all state and federal agencies involved in water resource planning. It is the intention of the state to eventually recommend a statewide water development plan. A main feature of a statewide plan approach is that programs available from other state and federal agencies such as the Bureau of Reclamation, Corp of Engineers, and State Department of Economic Planning and Development, along with USDA programs be combined in order to best fit the resources to the State's goals. The State recognizes that time changes people's awareness, their concerns, and priorities and that any inflexible selected plan that does not react or allow for reaction to changing values and politics will not be implementable.

At the beginning of this study the State of Wyoming decided that a list of USDA projects that somehow emerged as the "Selected Plan" would not be particularly usable to them. Instead, a planning process was needed, oriented on the philosophy and needs of improved implementation planning. Because of this concept of a planning process, several alternative futures were analyzed instead of one "Selected Plan" future. It is within the framework of alternative futures that the parameters used to measure changes to identified problems and concerns reside. Therefore, an alternative future is able to show effects on identified problems and concerns no matter what emphasis was used to construct the alternative future.

There are infinite numbers of possible alternative futures. One hundred ninety-two futures were considered. Of these, eight were selected for further study. Also a baseline alternative future was constructed for comparison purposes.

ALTERNATIVE FUTURES

Twenty-five assumption indices make up each alternative future for the nonforest lands in the Basin. Any one or all of the indices can be varied and with each variation a new alternative future is constructed. Table 2-1 shows the agricultural alternative futures analyzed and how the assumption indices varied. A discussion of each alternative future is included in this chapter. Alternative Future I

Table 2-1 AGRICULTURAL ALTERNATIVE FUTURES

Platte River Basin, Wyoming

Assumption Indices \ Alternative Future	I	II	III	IV	V	VI	NED	EQ	Baseline
1. Population	E	E	State of Wyoming	E	E	State of Wyoming	E	E	E
2. Demand (Food & Fiber)	E'	E'	E'	Free	E'	E'	Free	E'	E & E'
3. Water Decree & Compact	Status Quo	Status Quo	Status Quo	Status Quo	Green River Import	Green River Import	No Limitation	Status Quo	Status Quo
4. Price Level	Water Resource Council	Water Resource Council	Water Resource Council	SRS 5 years Average	Water Resource Council	Water Resource Council	Water Resource Council	Water Resource Council	Water Resource Council
5. Discount Rate	Water Resource Council								
6. Zero Discharge	Status Quo	Entire Curve	Status Quo	Entire Curve	Status Quo	Status Quo	Status Quo	Status Quo	Status Quo
7. Land Conversion	Meet Crop Demand								1975
8. M&I Development (Coal Growth)	Status Quo	Status Quo	WWPP Estimates	Status Quo	Status Quo	WWPP Estimates	Status Quo	Status Quo	1975
9. Real Estate Taxation	Status Quo								1975
10. Drought	Average Precip.	Average Precip.	Average Precip.	Average Precip.	Average Precip.	75% of Average Precipitation	Average Precip.	Average Precip.	Average Precip.
11. Quality of Life-Social Conscious	Increasing Environmental Quality							Erosion Limitation	1975
12. Petroleum Energy	Status Quo								
13. Cooperatives	Status Quo								
14. Technology	Modified Historical Trend								
15. Federal Action Programs	Status Quo								
16. Budget (Federal Staff)	Status Quo								
17. Excluded (Restrict) Land Activities	Status Quo								
18. Federal Cost Share	Status Quo								
19. Percent Participation	Status Quo								
20. State Programs Financial Aid	Status Quo								
21. Percent Participation	Status Quo								
22. Damage Reimbursement	Status Quo								
23. Land Trespass Adjustment	Status Quo								
24. Sustained Yield	Yes								
25. Unemployment	Status Quo								

is discussed in detail for each of the assumption indices and then the others are discussed in the context of how they differ from Alternative Future I.

Most of the indices are held constant over time. Future consumption or production levels are estimated where supportive information is available. In some cases, future levels are held at the current level. Changes will undoubtably occur but, procedures and supportive data for making reliable projections are inadequate or not available within the resources of this study.

Alternative Future I

Synopsis

Alternative Future I analyzes the capability of the Platte River Basin resources to meet its projected share of national demand. Both resource limitations and lack of economic incentive may cause an inability to produce the national share. Forestry aspects of this alternative were to meet national demand for timber with low-quality, timbered roadless areas in wilderness. This alternative future is coded in tables in this report as:
I OBERS - Crop Production.

Detail

Following is a discussion of each of 25 assumption indices.

1. Population - OBERS projections used are prepared by the Bureau of Economic Analysis of the U. S. Department of Commerce and Economics, Statisitics, and Cooperatives Service of the U. S. Department of Ariculture. For the Basin they are OBERS Series E and are:

Year		Population
1970	-	170,325
1985	-	170,500
2000	-	171,066
2020	-	175,078

   An alternative set of population projections were prepared by the State of Wyoming Water Planning Program.

2. Demand (Food and Fiber) - OBERS E Prime projections were used for food and fiber. E Prime projections are projections made specifically for agricultural and forestry production. Alternative Future I constrains the production of food and fiber in the Basin to be less than or equal to the production projected in the OBERS E Prime Series. Production will occur only if the net returns per acre is greater than zero. Thus idle or unused land may occur in any of the alternatives if no "profitable" crop can be produced on that particular acre of land.

3. Water Decree and Compact - Within the Basin there are two U. S. Supreme Court Decrees and one Interstate Water Compact. In this alternative there has been no change in the decrees or compact and no new decrees or compacts have been enacted that would change the present use of water.

4. Price Level - The Water Resource Council (WRC) price level used in this alternative is a set of long term weighted average prices received for agriculture commodities produced in the Basin.

5. Discount Rate - A discount rate of 6 5/8 percent was used for the agricultural project evaluations. The analysis of forestry alternatives uses the 1975 WRC rate of 5 7/8 percent. The rate was used to evaluate direct landowner costs and returns for timber management efficiency over a span of 100 years.

6. Zero Discharge - This line item relates specifically to discharge of pollutants through irrigation return flows into water courses. In this alternative there is no constraint of return flows.

7. Land Conversion - Conversion of one land use to another land use is allowed to take place in this alternative. These conversions are allowed as necessary to meet the projected crop demands. The conversions are shown in Table 1-10.

8. M and I Development (Coal Growth) - In this alternative there is no rapid expansion of mineral activities, such as coal mining, that require large amounts of land or water.

9. Real Estate Taxation - Taxation for real estate remain as it is presently.

10. Drought - In this alternative no large scale drought conditions exist in the Basin and watershed water yields are at the 80 percent chance volume.

11. Quality of Life - Social Conscious - It is assumed that there is a general increase in environmental quality in the Basin.

12. Petroleum Energy - In this alternative petroleum energy remains available as it is presently and prices are the 1975 level.

13. Cooperatives - In this alternative there is no movement toward organizing cooperatives in the Basin.

14. Technology - It is assumed that technological advances continue. However, the rate of advancement in things such as crop yield will not be as great as the historical trend.

15. Federal Action Programs - Programs such as present USDA programs will remain in existance.

16. Budget (Federal Staff) - Federal budgets will be such that staffing of federal agencies in the Basin will remain as they are now.

17. Excluded (Restricted) Land Activities - In this alternative no new program will be initiated that removes large amounts of land from present or potential agricultural land uses.

18. Federal Cost-Share - Cost-sharing remains as an incentive to initiating projects.

19. Percent Participation - Federal cost-sharing percentages remain as they are presently.

20. State Programs Financial Aid - State programs remain as they are now.

21. Percent Participation It is assumed any cost-sharing percentage the State has remains at the present level.

22. Damage Reimbursement - Payments for damage, such as caused by wildlife, remain at the present level.

23. Land Trespass Adjustment - In this alternative future trespass constraints inforce now will remain inforce.

24. Sustained Yield - All land use will utilize the concept of continued sustained yield in regards to production from a given land unit.

25. Unemployment - In this alternative unemployment in the Basin stays at the present levels.

Alternative Future II

Synopsis

This alternative future responds to the question of zero discharge of irrigation return flows. The Basin attempts to

produce its projected agricultural share of national demand. The analysis includes points along a curve showing the cost and effects of reducing irrigation return flows by 50, 75, and 100 percent. The percent reductions refer to reductions of return flows that occur in Alternative Future I.

The sprinkler system was selected the most likely system to meet zero discharge constraints. There are other ways, including tail water recovery ponds and better management of existing surface systems, but it was felt that sprinklers would properly reflect the extra cost and management involved. Forestry aspects were analyzed in the context of meeting the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

This alternative future is coded in tables in this report as: II OBERS - No Return Flow Reduction; II OBERS - 50% Return Flow Reduction; II OBERS - 75% Return Flow Reduction; and II OBERS - 100% Return Flow Reduction.

Detail

The only assumption index that changes as compared to Alternative Future I is the Zero Discharge assumption.

Table 2-2 shows the levels of irrigation water return flows analyzed.

Table 2-2 Irrigation Return Flows
Platte River Basin, Wyoming

Alternative Future	Return Flow - 1,000 Acre-Feet		
	1985	2000	2020
II OBERS No Return Flow Reduction	104	102	96
II OBERS 50% Return Flow Reduction	52	51	47
II OBERS 75% Return Flow Reduction	26	25	23
II OBERS 100% Return Flow Reduction	0	0	0

Alternative Future III

Synopsis

Alternative Future III responds to the question of municipal and industrial competition for developed water supplies. Estimated diversion

amounts of water used for power production in the years 1985, 2000, and 2020 are used. These diversions represent transfers of agriculture water rights. Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

This future is coded in tables throughout the report as: III OBERS - Municipal and Industrial Water.

Detail

Two assumptions indices change in Alternative Future III, as compared to Alternative Future I. These two assumptions are Population, and M&I Development (Coal Growth).

The population assumption uses the State of Wyoming projections of 224,298 in 1985, 281,909 in 2000, and 291,625 in 2020.

The M&I Development (Coal Growth) uses agricultural water to supply power plant estimated requirements at the Laramie River Station near Wheatland and at the Wyoming Coal-Gas development near Douglas. Table 2-3 shows the amount of water taken from affected watershed groups to meet the power plant requirements. The watershed groups are identified on the map on page 1-6 in Chapter 1.

Alternative Future IV

Synopsis

Alternative Future IV responds to the zero discharge of irrigation return flows as does Alternative Future II. The difference is that the agricultural production is not limited to the Basin's share of national demand.

The analysis includes several points along a curve showing the cost and effects of reducing irrigation return flows by 50, 75, and 100 percent. The percent reductions refer to the return flow amounts that occur in Alternative Future IV with no constraint on return flows.

Sprinkler systems were selected to represent the cost and management situation to be faced in reducing return flows. The extra costs involved were viewed as the main drive behind a change in existing irrigation patterns.

Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

This future is coded as: IV Maximum Agricultural Production - No Return Flow Reduction; IV Maximum Agricultural Production - 50% Return Flow Reduction; IV Maximum Agricultural Production - 75% Return Flow Reduction; and IV Maximum Agricultural Production - 100% Return Flow Reduction.

Table 2-3 Water Requirements for the Laramie River Station (years 1985, 2000, and 2020) and the Wyoming Coal Gas or Tri-State G & T Power Plant (years 2000 and 2020). Platte River Basin, Wyoming

Watershed Group 1/	Wyoming Coal Gas	Laramie River Station
	------------Acre-Feet------------	
1	830	
2	1,940	
3	520	
4	1,050	
5	1,660	
6	220	
7	120	
8	330	
9	880	
10	180	
11	70	
12	810	
13	280	
15	30	
16	220	
17	390	
18	280	
19	120	
20	300	
28		1,360
29		1,260
30		1,590
31		1,050
37		490
38		1,590
39		5,590
40		1,010
41	670	
43	370	
Stateline	3,730	8,560
Total	15,000	22,500

1/ Watershed Group are shown on map Figure 1-2, page 1-6.

Detail

Three assumption indices change in Alternative Future IV as compared to Alternative Future I. These are the Demand (Food and Fiber), Price Level, and Zero Discharge indices.

The Demand (Food and Fiber) projections are not constrained to the OBERS E Prime production as in Alternative Future I. Instead, the Basin is allowed to produce the mix of crops which is most economically optimal.

Price Level was changed from WRC prices to a five year average of Basin prices as reported to the Wyoming Crop and Livestock Reporting Service (SRS). The WRC prices are current normalized prices for the time period 1972 to 1976. Normalization removes short term fluctuations and involves a weight averaging process that places the greater emphasis on prices received in 1976 than in 1972. The weight coefficient varies by commodity and was estimated from a 27-year time series of prices for each commodity. The SRS five year average price is based on the same concepts as the WRC prices. However, the current price is a simple arithmatic average of the five years 1972 to 1976.

Both the WRC and Wyoming Crop and Livestock Reporting Service five year average prices are derived from annual Wyoming Agricultural Statistical Data.

The Zero Discharge changes to show the reduction in irrigation water return flows. Table 2-4 shows the return flow values used.

Table 2-4 Return Flows
Platte River Basin, Wyoming

Alternative Future	Return Flow 1,000 Acre-Feet 1985	2000	2020
IV Maximum Economic Return-No Reduction of Return Flows	55	49	49
IV Maximum Economic Return-50% Reduction of Return Flows	27	25	24
IV Maximum Economic Return-75% Reduction of Return Flows	14	12	12
IV Maximum Economic Return-100% Reduction of Return Flows	0	0	0

Alternative Future V

Synopsis

Alternative Future V responds to the question of importing Green River water into the Platte Basin. The Platte Basin is limited to

producing its' share of national needs. The analysis is intended to show the effects on agricultural revenues, production practices and environmental factors with 50 percent, 100 percent and an unlimited increase in available water to irrigated land along the North Platte River below Pathfinder Reservoir. Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

This alternative is coded as: V OBERS - 50% Import Irrigation Water; V OBERS - 100% Imported Irrigation Water; and V OBERS - No Limit Import Irrigation Water.

Detail

This alternative future varies from Alternative Future I only in the Water Decree and Compact index. Water is imported from the Green River Basin and supplied to various irrigated areas along the North Platte River. These amounts are added to the supply presently being diverted from the North Platte River or being stored in the main stem reservoirs. The water added to existing supplies are 50 percent more than existing supply; doubling the existing supply; and then allowing the various irrigated areas to use as much irrigation water as is needed to use the available land. Table 2-5 shows the amount of water imported into various watershed groups (see Map page 1-6, Chapter 1).

It is interesting to note the results of the unlimited import of water from the Green River Basin, almost 1.6 million acre-feet, would need to be imported by the year 2020. This is currently considered impractical and is not emphasized.

Alternative Future VI

Synopsis

Alternative Future VI responds to the question of importing Green River Basin water. The Platte Basin water supply for agricultural use is reduced by requiring the anticipated municipal and industrial needs, as in Alternative Future III, be met. Also, a drought in the Basin is simulated by reducing the water yields from each watershed. Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

This alternative is coded as: VI OBERS - Municipal & Industrial - Import Water - Drought.

Detail

This alternative future varies from Alternative Future I in four respects. They are as follows:

Table 2-5 Water Imported from the Green River Basin
Platte River Basin, Wyoming

Watershed Group	50 Percent Increase	100 Percent Increase
	Acre-Inches	
07	1,792	3,584
08	2,388	4,776
11	656	1,312
14	148,418	296,836
15	230,216	460,432
16	3,477	6,854
17	9,077	18,154
18	3,402	6,945
19	47,136	94,272
20	35,449	70,898
21	1,416	2,832
22	19,222	38,444
23	21,168	42,336
24	928	1,856
25	561,000	1,122,000
27	772,800	1,545,600
29	532,200	1,064,400
TOTAL (Acre-Inches)	2,390,745	4,781,531
TOTAL (Acre-Feet)	199,229	398,461

Population - State of Wyoming WWPP population projections are used. The population projections are: 224,298; 281,909; and 291,625 for the years 1985, 2000, and 2020 respectively.

Water Decree & Compact - water is imported from the Green River Basin in the amounts of 22,500 acre-feet in 1985 and 37,500 acre-feet for the years 2000 and 2020. This water is used to supply the needs of the anticipated power plant growth.

M&I Development (Coal Growth) - Industrial growth is anticipated in the form of power plant construction at the Laramie River site and also at the Wyoming Coal-Gas site near Douglas. This amounts to a use of 22,500 acre-feet in 1985 and 37,500 acre-feet in the years 2000 and 2020.

Drought - it is assumed that precipitation is such that the 80 percent chance water yield is reduced 25 percent.

National Economic Development Alternative Future

Synopsis

The National Economic Development (NED) Alternative Future displays the effect of additional late season irrigation water supply while simultaneously maximizing crop production. This shows resource capability for watershed development having all resources operating at full economic potential. The NED Alternative Future is then defined to be the one that maximized agricultural production to the Basin.

Forestry aspects of the NED Alternative Future is to produce the Basin's share of national timber demand, then maximize the amount of timber harvest after 2020. All timbered roadless areas are used for production. It is assumed that economic returns, jobs, and diversification into a stronger forest products industry would maximize economic development.

This alternative future is coded: Maximum Agricultural Production-No Project Development; Maximum Agricultural Production-Project Development in NP Decree Area; Maximum Agricultural Production-Project Development Outside NP Decree Area; and Maximum Agricultural Production-Project Development.

Detail

This alternative future differs from Alternative Future I in two areas. These are Demand (Food and Fiber) and Water Decree and Compact.

The Demand (Food and Fiber) projections are not constrained to the OBERS E Prime production as in Alternative Future I. Instead, the Basin is allowed to produce the mix of crops which is economically optimal. The exception to the above is the production of wheat, which is limited to amounts 50 percent greater than Alternative Future I for each respective year.

The Water Decree and Compact also differs from Alternative Future I in that there are no limitations imposed on the number of acres that can be irrigated within the boundaries of the North Platte Decree area.

Environmental Quality Alternative Future

Synopsis

The Environmental Quality (EQ) Alternative Future displays the effect of reducing the levels of soil erosion on agricultural resource use and income. Evaluations were made for 90, 80, and 70 percent of Alternative Future I erosion. Soil erosion is used as an indicator of environmental quality.

The forestry aspects maximize the use of wilderness areas and environmental quality while meeting the Basin's share of timber through the year 2020. After 2020, timber harvest levels are allowed to increase only if the operation increases environmental quality. Environmental quality is a combination of water quality, air quality, wildlife habitat quality, and development and use quality indices. In this future all roadless areas are used for wilderness.

Detail

The EQ Alternative Future differs from Alternative Future I in only one respect. This is in Quality of Life-Social Conscious, i.e. the total quantity of soil erosion permitted.

Three increments of soil erosion are used and compared against the soil erosion of Alternative Future I. The three increments are reduction of Alternative Future I soil erosion by 10 percent, 20 percent, and 30 percent.

Baseline Future

Synopsis

The Baseline Future is made up of projections of the Basin's share of national demands for production combined with the current situation in resource development and use. The Baseline Future plays an important part in the analysis of other alternative futures, because each of them are compared against it.

The Baseline projection is derived by extrapolating current or emerging tendencies that reflect current expectations. It was constructed by using series "E" population estimates and other nationally consistent estimates of economic activity and land use expected up through the year 2020. Historical relationships are used to derive the Basin's share of national agriculture and forestry production. For outputs or impacts that have no quantifiable national share, the 1975 situation was used as the base.

Tables 2-6 through 2-9 show the baseline projections for the three time periods of 1985, 2000, and 2020. The tables show the outputs or

impacts, the measurement unit and the three time periods. Numbers down the left side of the table refer to both a set of footnotes and to the line item in the overall table (Alternative Futures Table) used to display each alternative future. These numbers are not necessarily in numerical order, but are grouped by source or method of derivation. The footnotes are displayed following each table.

Table 2-6 refers to products for which the Water Resources Council (WRC) has made projections (OBERS).

Table 2-6 OBERS Projections
Platte River Basin, Wyoming

Footnote or Line Item	Outputs or Impacts	Units 1000	Time Frame 1985	2000	2020
1.	Alfalfa Hay	Tons	289	350	411
2.	Native Hay & Pasture Equiv.	Tons	683	796	910
3.	Barley	Bushels	618	643	621
4.	Dry Beans	Cwt.	234	152	96
5.	Corn	Bushels	2,332	3,289	3,932
6.	Corn Silage	Tons	371	468	575
7.	Oats	Bushels	1,300	1,654	2,000
8.	Potatoes	Cwt.	570	590	755
9.	Wheat & Rye	Bushels	4,054	5,092	5,649
10.	Sugar Beets	Tons	478	590	755
26.	Non Forest Range Livestock	AUM	2,541	2,520	3,383
28.	Feed Grain Requirements, Feed Unit	F.U.	210,000	285,000	335,000
48.	Total Timber Harvest, All Owners	Board-ft.	47,000	54,000	59,000

Footnotes for Table 2-6:

1-10. Crop projections for the Platte River Basin are disaggregated from the WRC agricultural OBERS E Prime projections. The procedures involves relating historical Basin production to the WRC Subareas having boundaries overlapping the Basin. See the Basic Land Relationships Working Paper for further details.

26. Non Forest Range livestock feed requirements are calculated as the feed requirement to support the Basin's requirement for pounds of cattle, sheep, pork, and milk products. This feed requirement is made up of contributions from privately operated rangeland, including intermixed BLM and State land, and range inside National Forest boundaries. Livestock roughage (AUM) requirements equals pounds of livestock times feeding efficiency times percent roughage in ration. Rangeland AUM's equals livestock AUM requirements minus cropland roughage. As shown in the following, livestock feeding efficiencies and ration composition vary by species but are held constant over time.

	Feeding Efficiency Feed Units Per Pound	Percent Roughage in Ration
Cattle and Calves	13.30	85.65
Pork	4.70	7.25
Lamb and Mutton	14.90	37.50
Milk	1.05	60.90

	Conversion to Feed Units
Alfalfa Hay	1,100 Feed Units per Ton
Native Hay	800 Feed Units per Ton
Corn Silage	400 Feed Units per Ton
Pasture and Range	450 Feed Units per Ton

Cropland roughage consists of corn silage, alfalfa hay, native hay, and pasture. Cropland roughage requirements are the OBERS E Prime Series. One AUM = 0.5625 tons of native hay.

28. The feed grain OBERS E Prime projections are converted to feed units and summed into a single feed unit equivalent. A feed unit is defined as the feed value of one pound of No. 2 yellow dent corn. Other feed grain equivalents are listed below:

	Conversion to Feed Units
Corn Grain	56 Feed Units per Bushel
Oats	29 Feed Units per Bushel
Barley	43 Feed Units per Bushel
Rye	48 Feed Units per Bushel
Wheat	63 Feed Units per Bushel

48. Total timber harvest log scale, all ownerships.

Table 2-7 refers to a national share or regional projection that are not included in the WRC projections.

Table 2-7 Regional or National Projection Not Involving OBERS
Platte River Basin, Wyoming

Foot-note or Line Item	Outputs or Impacts	Units 1000	Time Frame 1985	2000	2020
39.	Flat Water Fishing	Rec-Day	1,062	1,440	2,212
40.	River & Stream Fishing	Rec-Day	612	829	1,274
41.	Big Game Hunting	Rec-Day	219	315	517
42.	Small Game & Bird Hunting	Rec-Day	137	206	374
46.	Wilderness Experience	Rec-Day	74	74	74
47.	Backcountry Experience	Rec-Day	50	50	50
49.	National Forest Timber Harvest	Board-ft.	38,500	44,280	48,380
51.	State & Private Timber Harvest	Board-ft.	6,580	7,560	8,260
53.	Lumber Produced, Lumber Scale	Board-ft.	67,300	74,100	77,800

Footnotes for Table 2-7:

39-42. Recreation-day projections can be found on page 71 of the Recreation Working Paper. In general, the projection technique consists of determining the average rate of participation in terms of the proportion of the resident, nonresident or both population participating for several outdoor recreation activities, and then determining how participation in each of the activities would be affected by changes expected to occur over time in a set of factors that influence the demand for outdoor recreation. Details of this technique can be found in the 1975 Wyoming State Comprehensive Outdoor Recreation Plan (SCORP).

46-47. Different methodologies, each with its own rationale, gave a range of 630,800 recreation-days down to 124,146 recreation-days. The 124,146 is related to the Resource Planning Act of 1975 Assessment and is used for this study's projection. Also, for the study, 60 percent of the use projected will be assumed to be a use which can be satisfied only in a wilderness area. Forty percent will be assumed to be a use which can be satisfied in a less pristine area managed to accommodate more people per acre per year than is appropriate in wilderness. Backcountry experience can be met in the wilderness. The reverse is not necessarily true.

49. The Basin's National Forest share of timber harvest, based on resource capabilities, is 82 percent.

51. State and private timber harvest share of national demand is 14 percent based on resource capability.

53. Timber harvest demands were converted into the lumber that could be produced under optimal sawing practices.

Table 2-8 documents the present situation.

Table 2-8 Present Situation
Platte River Basin, Wyoming

Footnote or Line Item	Outputs or Impacts	Unit 1000	Time Frame 1975
12.	North Platte Decree Irrigation	Acres	168
13.	Irrigation Outside Decree Area	Acres	506
14.	Revenue, Agric., Private, Net	Dollars	35,349
15.	Production Cost, Agric., Private	Dollars	49,317
16.	Agriculture Land Flooding	Acres	91
17.	Urban Flooding	Acres	2
18.	Municipal & Industrial Water	Acre-ft.	18
19.	Irrigation Return Flows	Acre-ft.	130

Table 2-8 Present Situation (continued)

Footnote or Line Item	Outputs or Impacts	Unit 1000	Time Frame 1975
20.	Acres with Irrgtn Return Flows	Acres	243
21.	Surface Erosion, greater than 0.5 t/a/y	Acres	4,604
22.	Fisheries, River & Stream	Miles	4.4
23.	Fisheries, Lake & Reservoirs	Acres	71.6
24.	Guaranteed Fishing Access	Rec-Day	2,127
25.	Guaranteed Hunting Access	Rec-Day	280
27.	Nat'l. Forest Range Livestock	AUM	40
31.	Critical Areas - Big Game Use	AUM	33
32.	Critical Areas - Livestock Use	AUM	69
33.	Non-Crit. Area - Big Game Use	AUM	39
34.	Non-Crit. Area - Livestock Use	AUM	2,335
35.	Critical Big Game Area	Acres	590
36.	Protected Aquatic Animal Species	Miles	352
37.	Protected Terrestrial Animal Species	Acres	883
38.	Lakes & Reservoirs Surface	Acres	72
43.	Boating, Swimming, & Water Skiing	Rec-Day	1,021
44.	Designated Wilderness	Acres	43
45.	Managed Backcountry	Acres	247

Footnotes for Table 2-8:

12. The North Platte River Decree establishes a maximum of 168,000 acres that can be irrigated within the boundaries of the decree area. However, Pacific Power and Light owns water rights

equivalent to 1,860 acres of irrigated land. The irrigated acreage limitation then is 166,140 acres. The Baseline Future uses Alternative Future I projection to measure effects. The areas are 49,000 for years 1985 and 2000 and 43,000 acres for 2020.

13. Total inventoried irrigated land minus 166,140 decree area acres currently irrigated equals irrigation outside the North Platte River Decree area: 672,160 - 166,140 = 506,020 acres. The Baseline Future uses Alternative Future I projection to measure effects. The areas are 204,000 acres for 1985, 198,000 acres for 2000, and 184,000 acres for 2020.

14. These are net receipts over production costs to the private agricultural sector, but they do not directly include government incentive payments, cost-sharing, or subsidy. The Baseline Future uses Alternative Future I revenue projections.

15. Production costs are the private agricultural sector costs that vary according to the necessary inputs for crop or range production. The Baseline Future uses Alternative Future I production cost projections. See the Basic Land Relationships Working Paper for the development of these costs.

16. Existing flood protection needs are from Missouri River Basin (MRB) Comprehensive Framework Study, Platte-Niobrara River Subbasin Needs and Problems Work Group Report, June 1967. The situations where flooding is considered beneficial such as in mountain meadow hayland have been excluded.

17. Existing flood protection needs are from the Platte-Niobrara Subbasin Needs and Problems Work Group Report, MRB Comprehensive Framework Study, June 1967 and the Wyoming Water Planning Program Report No. 9.

18. Municipal and industrial water use is the 1975 use from surface sources. Existing and potential ground water development for M&I purposes are not considered in this number.

19. Irrigation return flows in acre-feet refers to the non-point source pollution situation that would be affected by a zero discharge mandate. The 1975 situation of 130,000 acre-feet comes from the Basin modeling efforts and are not measurements of stream data. The Baseline Future uses Alternative Future I projections to measure effects.

20. Non-point source pollution tabulated by acres refers just to the acres contributing irrigation return flows. The 1975 situation as determined by the modeling effort indicates

243,000 acres. The Baseline Future uses Alternative Future I projections for the three time frames.

21. Surface erosion exceeding 0.5 ton per acre per year approximates a trout water quality threshold of 170 ppm. of suspended sediment. This threshold crudely reflects excessive siltation damage to fisheries from the agriculture and forestry land use activities under analysis. The 1975 total amount derived from the agriculture computer model of the Basin represent a balance point from which to assess changes. The Baseline Future uses Alternative Future I projections of 5,051,000 acres in 1985, 5,102,000 acres in 2000, and 5,886,000 acres in 2020 from cropland and rangeland.

    In the agricultural model an average surface erosion amount of 0.5 ton per acre per year was calculated to be the 170 ppm suspended sediment threshold. In the forestry model the 170 ppm suspended sediment amount was identified directly (See the Basic Land Relationships Working Paper).

22. River and stream fisheries are inventoried to be 4,409 miles spread over 5 quality classes (Recreation Working Paper, page 43). Adjustments to inventoried miles would reflect water resource development projects. Since only a few miles are considered warm water fisheries, the total is used without separation into cold and warm water classifications.

23. Lake and reservoir fisheries are inventoried at 71,574 surface acres (Recreation Working Paper, page 43). Adjustments reflect water resource development projects. The inventory includes all lakes and reservoirs over 5 surface acres.

24. Guaranteed fishing access provides for 2,127,000 recreation-days (Recreation Working Paper, page 45). The table in the working paper entitled, "Supply of Sport Fishing Opportunity," shows only 1,556,512 fisherman-days measured as of 1975. Goals established in Table II, "Summary of . . . Needs . . . for OBERS E Population," indicates fisherman-day projections up to 3.5 million by the year 2020.

25. Guaranteed hunting access is 280,000 recreation-days. The Recreation Working Paper, page 5, Table II, "Summary of . . . Needs . . . for OBERS E, Population," indicates recreation-days projections up to 841,000 by the year 2020.

27. National Forest Range production was held constant at 40,000 AUMs based on the current range management planning. Long range allotment plans indicate no future increases in permitted numbers of AUMs.

31. Big game consume 33,000 AUMs of critical area AUM production. It was assumed that the critical winter big game area would remain constant. The figures are derived from Wyoming Game and Fish Department survey of approximate density numbers for critical wildlife areas.

32. Livestock presently consume 69,000 AUMs of critical area AUM production. Alternative Future I is used for Baseline Future Projections.

33. Big game currently use 39,000 AUMs of noncritical area AUM production. These are AUMs that could be available for livestock use.

34. Current range use by livestock is 2,335,000 AUMs. See footnote 26 for determination of AUMs. The Baseline Future uses Alternative Future I projection to measure effects.

35. There are 589,556 acres of winter big game habitat as identified by the Wyoming Game and Fish Department. The following shows the critical winter wildlife habitat and management areas: Deer--342,716 acres; antelope--109,120 acres; elk--66,440 acres; deer/antelope--21,280 acres; deer/elk--18,770 acres; Pennock Mountain (deer)--12,400 acres; Morgan Creek (deer)--7,720 acres; and Medicine Bow (deer)--11,160 acres. Alternative Future I is used for Baseline Future projections.

36. Currently there are 352 miles of Class 1 and 2 stream fisheries in the Basin. Rare, threatened, and endangered aquatic animal specie locations are assumed to be identified with these two classes. Changes in the land area having over 0.5 ton per acre per year sediment loss are assumed to affect these two stream classes proportionally. Alternative Future I is used for the Baseline Future projections.

37. There are 883,363 acres available for terrestrial animal species protection. Included are critical winter wildlife areas, identified wildlife managed areas (i.e. Morgan Creek, Springer, etc.), wilderness, and roadless areas. If these areas are protected, then the identified terrestrial animal species would have an opportunity to be maintained in these areas.

    Footnote 35 lists the acres of critical winter wildlife habitat and management acres. Also Springer (1,880 acres) and Table Mountain (1,800 acres) are wildlife management areas for birds.

    Following is a listing of roadless, Wilderness, and Primitive Areas in the Basin.

National Forest Areas	Acres
Sheep Mountain	4,260
Sheep Mountain - 1	13,900
Snowy Range	17,805
Rock Creek	10,090
Pennock Mountain	10,270
Savage Run	11,940
Douglas Creek	14,980
Platte River	8,830
Coon Creek	11,290
Encampment River	6,000
Huston Park	7,400
Jack Creek	6,280
Deer Creek	13,320
Buffalo Peak	8,520
LaBonte Canyon	23,640
Eagle Peak	12,590
Laramie Peak	25,710
Middle Fork	11,840
Sweetwater Mid-Slope	11,340
Sweetwater Needles	12,160
Dutch Joe	4,920
Bridger Wilderness Area	11,120
National Forest Subtotal	258,205
Bureau of Land Management	
Ferris Mountain Primitive Area	32,052
Total	290,257

Alternative future I is used for Baseline Future projections.

38. There are 71,574 acres of standing water in the Basin (See page 43, Recreation Working Paper).

43. See Footnotes 39-42, page 2-16.

44. Designated Wilderness of 43,000 acres as of April, 1979. [a/] This consists of the Bridger Wilderness Area in the Basin (11,120 acres) and Bureau of Land Management Ferris Mountain Primitive Area (32,052 acres).

45. Backcountry acres equal 245,000. [a/] These are defined as being currently undeveloped. Backcountry is considered as being a viable option for nonmotorized recreation.

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a/ Savage Run is now Wilderness. Figures in the tables do not reflect this change since addition to Wilderness are likely following Congressional action on the RARE II proposals.

Table 2-9 document changes over the present situation.

Table 2-9 Changes
Platte River Basin, Wyoming

Footnote or Line Item	Outputs or Impacts	Units 1000
11.	Improved Irrigation Water Use	Acres
29.	Improved Range Management	Acres
30.	Critical BG Area Imprvd. Rng. Mgt.	Acres
50.	National Forest Net Present Worth	Dollars
52.	State & Private Net Present Worth	Dollars

Footnotes for Table 2-9.

11. Improved irrigation water use. During inventory and analysis five typical irrigation types were identified. Each type has an irrigation efficiency associated with it, with Type 1 being the most efficient and Type 5 being the least efficient. Any shift to a more efficient irrigation type is tabulated as acres improved. Alternative Future I is used for Baseline Future projection.

29. Improved range management indicates the acres treated to meet the objectives of a particular alternative future in the agricultural model. Range management improvement is a package of various range practices such as deferred grazing, brush management, water development, fencing and grazing plans. Alternative Future I is used for Baseline Future projections.

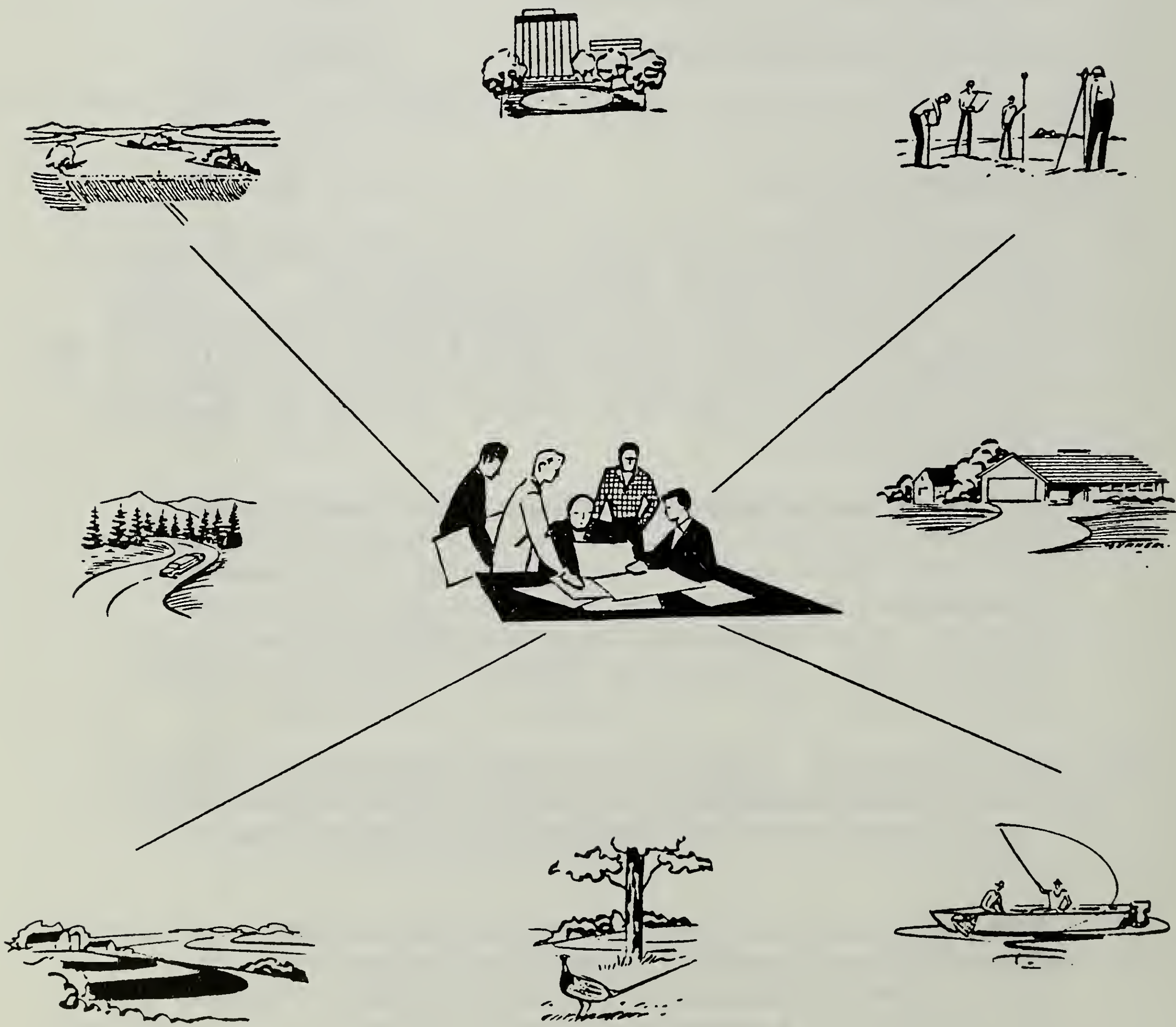
30. See Footnote 29. This is a further breakdown of treated rangeland by identifing the critical winter wildlife habitat rangeland that receives treatment for improved roughage production.

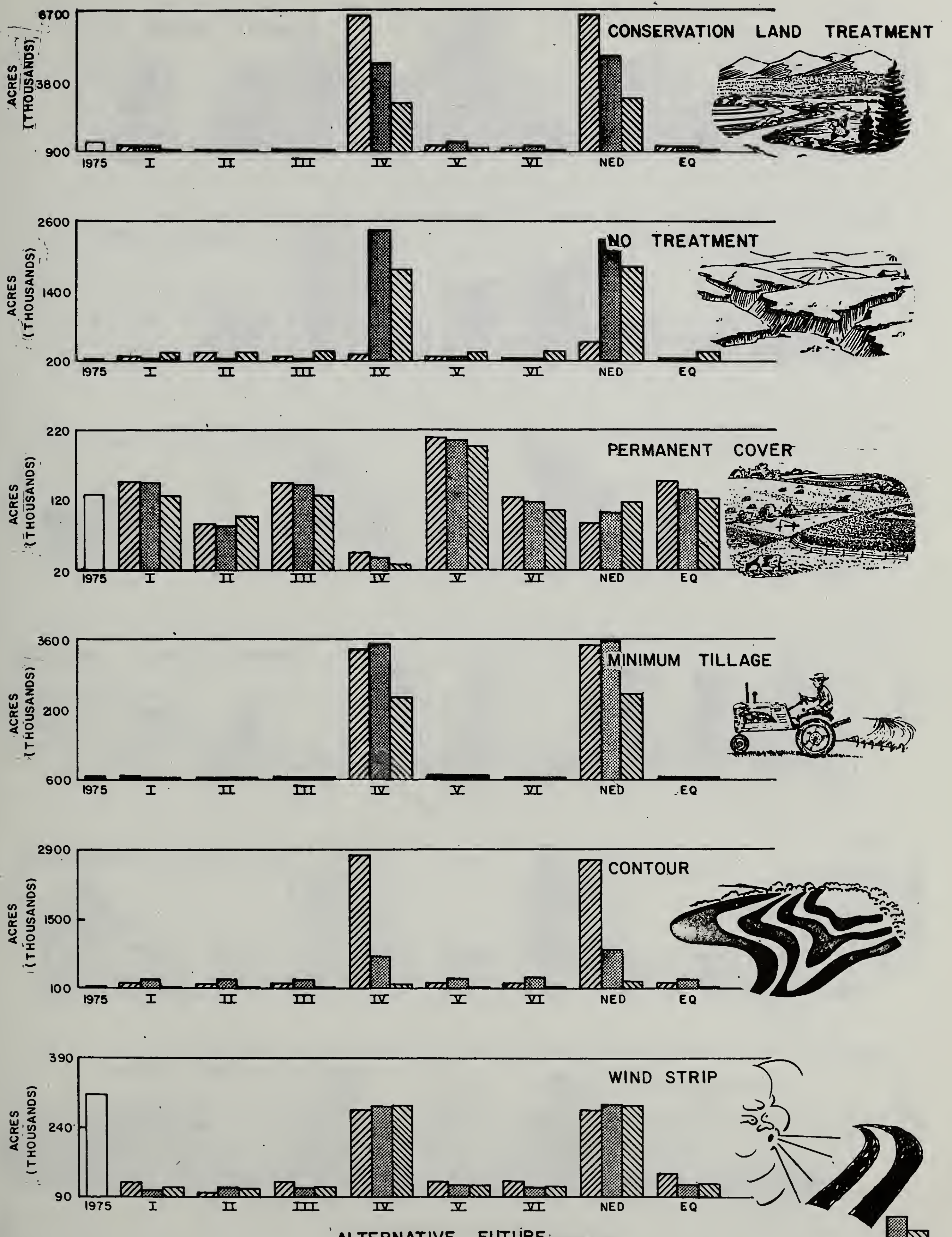
50. National Forest Net Present Worth is calculated as discounted revenue minus discounted cost. The discount rate of 5 7/8 percent (WRC 1976) was spread over 100 years. This is used as a measure of economic efficiency pertinent to the taxpayer.

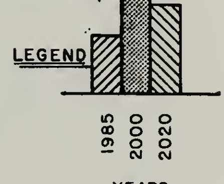
52. State and Private Net Present Worth is calculated as discounted revenue minus discounted cost. The discount rate of 5 7/8 percent (WRC 1976) was spread over 100 years. This is used as a measure of economic efficiency pertinent to state and private economic incentives.

ALTERNATIVE FUTURE INTERACTION

The following sets of bar graphs titled, "Effects of Alternative Futures", shows the interaction of the alternative futures on various elements in the Basin. Shown on the graphs are the alternative futures analyzed in the study. Effects are shown for the four time frames 1975, 1985, 2000, and 2020.



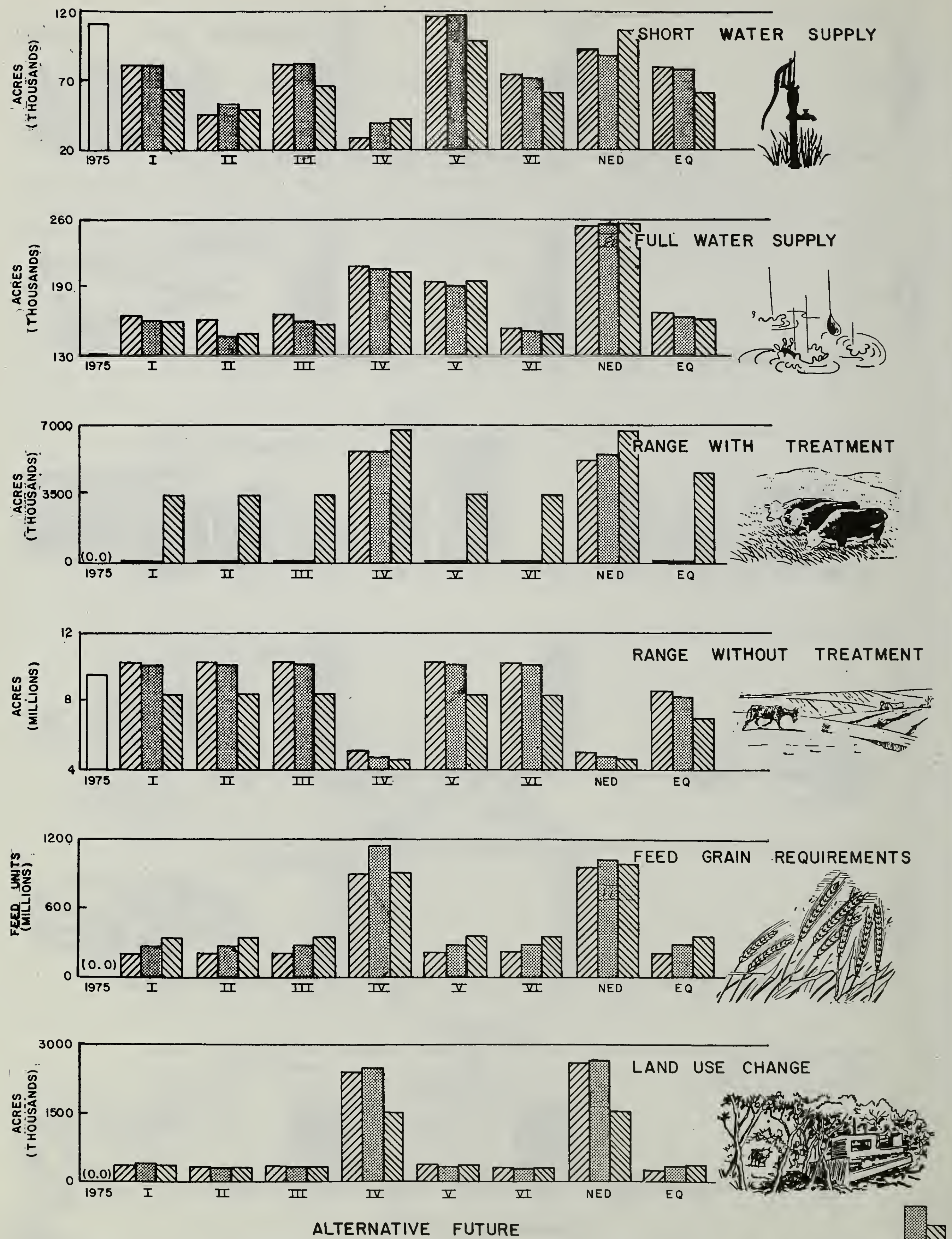


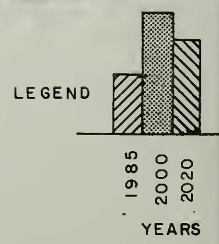


EFFECTS OF ALTERNATIVE FUTURES

PLATTE RIVER BASIN, WYOMING, 1979

Figure 2-1

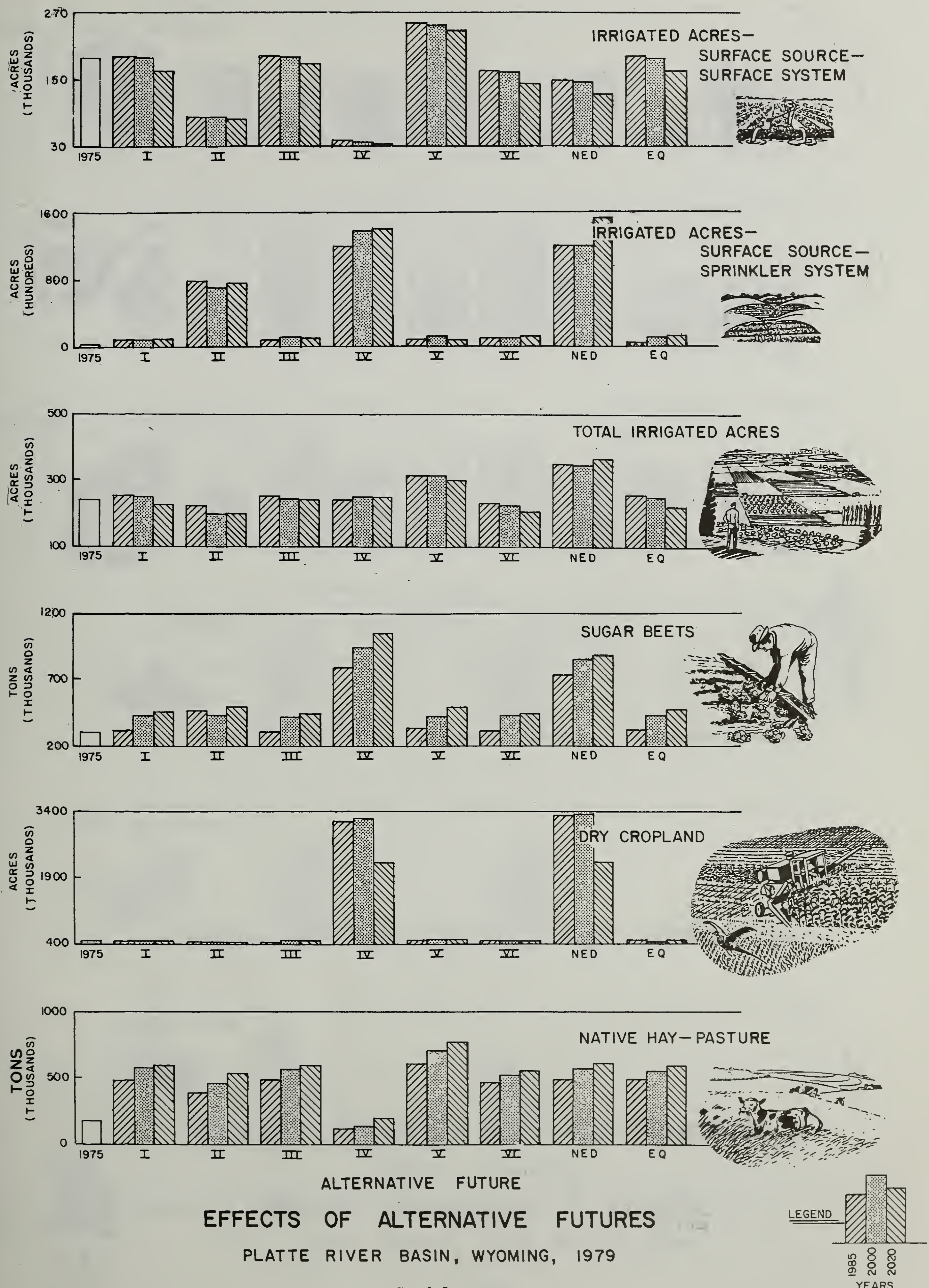




EFFECTS OF ALTERNATIVE FUTURES

PLATTE RIVER BASIN, WYOMING, 1979

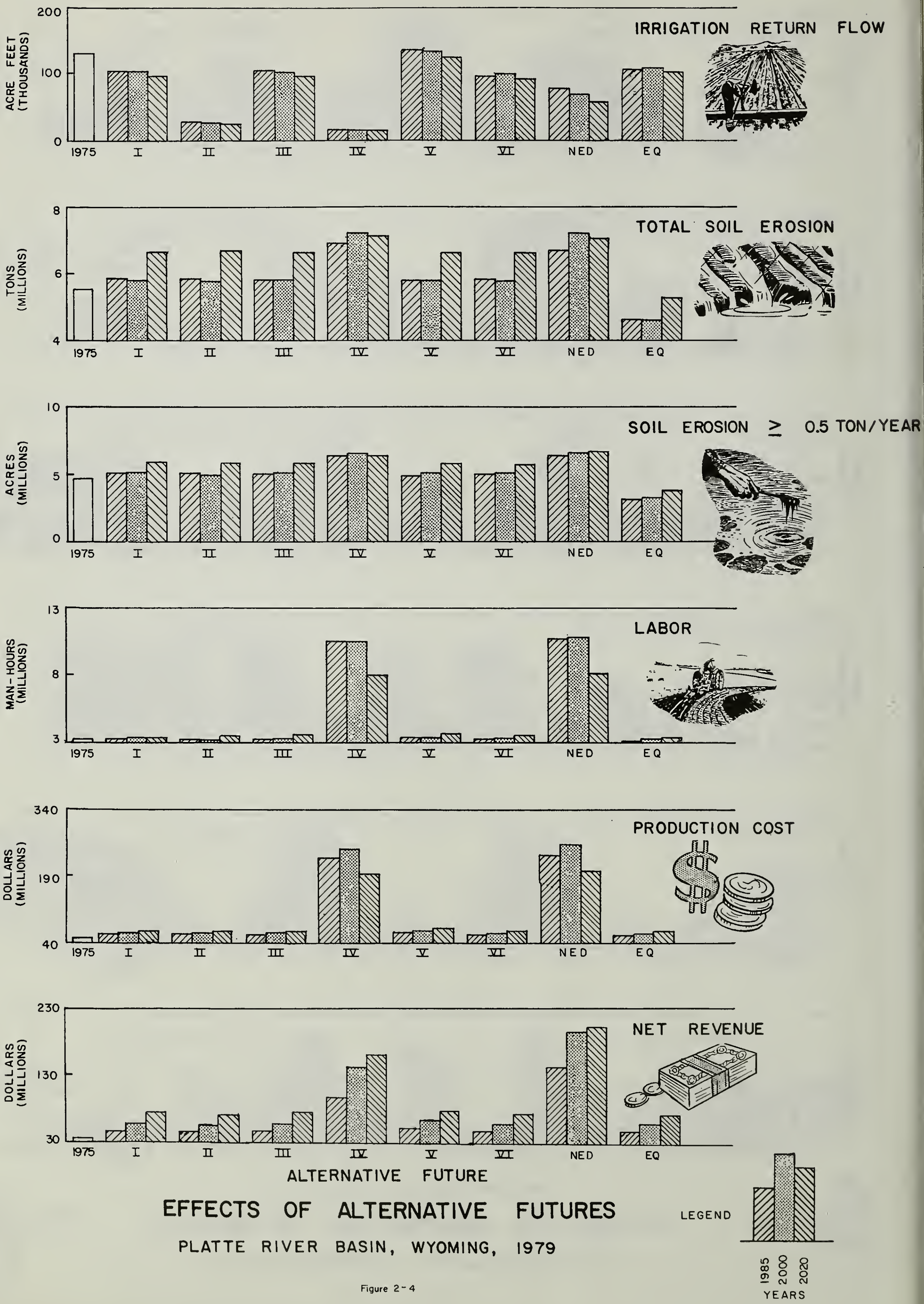
Figure 2-2



EFFECTS OF ALTERNATIVE FUTURES

PLATTE RIVER BASIN, WYOMING, 1979

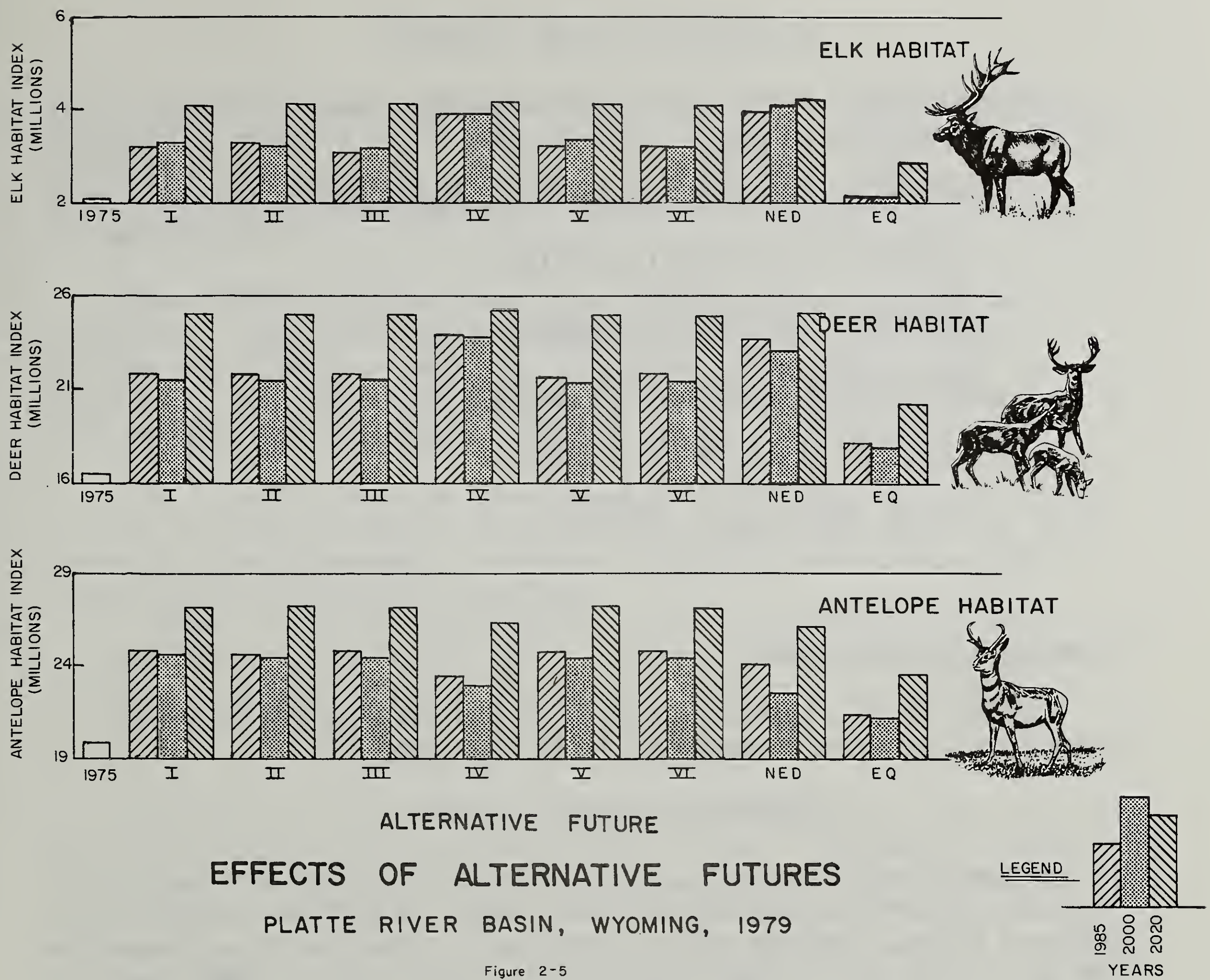
Figure 2-3



EFFECTS OF ALTERNATIVE FUTURES

PLATTE RIVER BASIN, WYOMING, 1979

Figure 2-4



EFFECTS OF ALTERNATIVE FUTURES

PLATTE RIVER BASIN, WYOMING, 1979

Figure 2-5

ALTERNATIVE FUTURE SUMMARIES

Each of the alternative futures analyzed has six display tables. These are:

SYNOPSIS AND COMMITMENTS 1/ FOR ALTERNATIVE FUTURE

EFFECTS OF ALTERNATIVE FUTURE

NATIONAL ECONOMIC DEVELOPMENT ACCOUNT

ENVIRONMENTAL QUALITY ACCOUNT

REGIONAL DEVELOPMENT ACCOUNT

SOCIAL WELL-BEING ACCOUNT

Detailed discussion of each of these tables can be found in Appendix B of this report.

Following is a summary of each of the alternative futures. Details can be found in the tables in the appendix.

ALTERNATIVE FUTURE I SUMMARY

Alternative Future I analyzes the capability of the Basin's resources to produce its agricultural share of national demand for food and fiber. Because this future was constructed as a comparison future, it does not differ from the Baseline Future a great deal. The year 2000 will be used as the focal point of the discussion.

Net revenue to private sources for agricultural production by the year 2000 is $58,010,000 compared to the present $35,349,000. Production costs are $62,936,000 as compared to $49,317,000. This alternative future falls short of meeting the baseline goals in native hay and pasture equivalent production by 227,000 tons, corn silage production by 141,000 tons, and sugar beet production by 174,000 tons. It also is short of the projected goal in several recreation areas. These areas are river and stream fishing, big game hunting, small game and bird hunting, and wilderness and backcountry experience. The shortage amounts to nearly 558,000 recreation-days in the year 2000.

For Alternative Future I to become a reality by the year 2000 it would require a commitment by USDA of nearly 806 man-years and $14.3 million for programs. Most of the man-year commitment would be to conservation land treatment (1.1 million acres), increased

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1/ Commitment is dependent upon the availability of the resources and upon the directives of the U.S. Congress and the State Legislature.

irrigation efficiency (90,000 acres), and annual timber harvest (54 million board-feet). Most of the program dollars commitment would be for these same activities. In addition, nearly $6.2 million would be committed to thinning and planting 81,900 acres of forest land.

About $13.7 million from local sources would need to be committed. Again conservation land treatment and increased irrigation efficiency would be the major activities. However, nearly $2.7 million would need to be committed to developing full water supplies to about 164,000 acres of irrigated land.

The State of Wyoming would need to commit nearly $2.5 million in this alterative future. Most of this commitment would be conservation land treatment, increased irrigation efficiency and protection of terrestrial habitat.

Additional details for this alternative future can be found in the six tables relating to Alternative Future I in Appendix B.

ALTERNATIVE FUTURE II SUMMARY

Alternative Future II was structured to respond to the question of zero discharge of irrigation return flows. The Basin's capability to produce its agricultural share of the national demand for food and fiber is again analyzed. The alternative future discussed is one showing the effects of reducing irrigation return flows by 75 percent. The year 2000 will be used as the focal point of the discussion for this alternative future.

For the requirements of Alternative Future II to be achieved, it would require a commitment by USDA of about 839 man-years and $14.6 million. Most of the man-years commitment would be conservation land treatment (1,081,000 acres), increased irrigation efficiency and installation of irrigation systems to reduce return flows (175,000 acres), and timber harvest (54,000,000 board-feet). Program dollars would be used for these activities, for developing full season water supplies to irrigated land (145,000 acres), and thinning and planting (82,000 acres) on forest lands.

Local sources would need to commit about $16.5 million. Conservation land treatment, increased irrigation efficiency, developing full water supply and installation of irrigation systems to reduce return flows would require the majority of the money committed by local sources.

The State of Wyoming would need to commit about $2.6 million. Most of this commitment would be to conservation land treatment, increased irrigation efficiency, installation of irrigation systems to reduce return flows, and protection of terrestrial habitat.

This alternative future does not meet the projected goals of the Baseline Future in the production of native hay and pasture equivalent by 338,000 tons, corn silage by 79,000 tons, and sugar beets by 158,000 tons. Irrigated acres are reduced nearly 70,000 acres and irrigation return flows are reduced about 77,000 acre-feet as compared to the Baseline Future and total Basin erosion is about 56,000 tons less. Both net revenue to private sources for agricultural production and production costs are reduced about $2.0 million each. Recreation related activities are below the Baseline Future in big game hunting, small game and bird hunting, and fishing. Shortage amounts to about 384,000 recreation-days. In this alternative future the index measurements for big game habitat, except for deer and grouse, improved over the Baseline Future.

Additional details for this alternative future can be found in the six tables relating to Alternative Future II in Appendix B.

ALTERNATIVE FUTURE III SUMMARY

Alternative Future III was structured to show the effects of competition for water between agricultural users and other users. The Basin's capability to produce its agricultural share of nation demand for food and fiber is analyzed. The year 2000 is used as the focal point of the discussion for this alternative future.

A commitment of 826 man-years, and $14.4 million by USDA is required in this alternative future. Most of the man-years commitment would be for conservation land treatment (1,140,000 acres), increased irrigation efficiency (88,000 acres), and annual timber harvest (54,000,000 board-feet). Most of the money would be committed to conservation land treatment, proper land use change (376,000 acres), increased irrigation efficiency, development of full water supplies (162,000 acres), wilderness, timber harvest, and thinning and planting (81,900 acres) on forest lands. The commitment for these activities would be nearly $14.2 million.

State commitment would be nearly $2.6 million. Most of the commitment would be to the same activities as USDA. In addition, nearly $490,000 would be committed to protecting or improving 845,000 acres of terrestrial habitat.

Local commitment would be about $14.4 million. The commitment would be to the same activities as USDA. Developing irrigation systems to reduce return flows from about 8,000 acres would require about $677,000.

Alternative Future III is short of meeting the Baseline Future projection in native hay and pasture equivalents (229,000 tons), corn silage (141,000 tons), and sugar beets (176,000 tons). There are other differences between this alternative future and the Baseline Future. Some of these differences are a reduction in irrigated

land of 3,000 acres; reduction in net revenue from agriculture to the private sector of $95,000; reduction in production costs of $151,000; and an increase in municipal and industrial water use of 37,500 acres-feet. Surface erosion of greater than 0.5 ton per acre per year increased on about 20,000 acres as compared to the Baseline Future. Recreation activities for hunting, and river and stream fishing is about 485,000 recreation-days less than the projected recreation-days. However, flat water fishing is about 101,000 recreation-days above the projected needs of the baseline. Big game habitat quality index increases in Alternative Future III.

Additional details for this alternative future can be found in the six tables relating to Alternative Future III in Appendix B.

ALTERNATIVE FUTURE IV SUMMARY

Alternative Future IV was structured to respond to the zero discharge of irrigation return flows question as does Alternative Future II. It is different in that the production of crops is not limited to the Basin's share of national food and fiber, and State of Wyoming 5-year average prices are used rather than the WRC prices. The alternative future discussed is one showing the effects of reducing irrigation return flows by 75 percent. The year 2000 will be used as the focal point of the discussion.

For the goals of this alternative future to be met it will require significant commitment on the part of USDA and state and local interests. The USDA will need to commit about 2,900 man-years and $23.8 million.

Most of the man-year commitment will be needed for conservation land treatment (4,529,000 acres), rangeland treatment (5,583,000 acres), timber harvest (54,000,000 board-feet), installing irrigation systems to reduce irrigation return flows (209,000 acres) and in proper land use change (2,620,000 acres). Program dollar commitment would be needed for the same activities, in addition to thinning and planting on forest land (81,900 acres), wilderness (164,000 acres), developing full water supplies for irrigated land (209,000 acres) and increased irrigation efficiency (72,000 acres).

The state would need to commit nearly $11.6 million. This commitment would be for many of the same activities as USDA. The major activities would be conservation land treatment, proper land use change, irrigation system to reduce return flows, rangeland treatment, increased irrigation efficiency and protection of terrestrial habitat.

Local commitment would be about $42.8 million. About $25.4 million of this commitment is for increased irrigation efficiency, developing full water supplies and irrigation systems to reduce return flows. Other major commitments would be to conservation land treatment, proper land use change, and rangeland improvement.

Comparing this alternative future to the Baseline Future reveals several significant differences. Production of alfalfa, small grains, dry beans, potatoes, sugar beets, and corn silage are all well above the baseline projections. Corn for grain, and native hay and pasture equivalents are below the baseline. Rangeland being converted to irrigated land is 45,000 acres greater than the baseline, and irrigated land receiving a full water supply is 45,000 acres greater. Irrigated land contributing to return flows is 67,000 acres more while the return flow is about 90,000 acre-feet less. Rangeland treatment is 5.5 million acres more than in the baseline and conservation land treatment occurs on about 3.4 million more acres of cropland. Big game habitat indexes, except for antelope, improve even though there is about 252,000 acres less critical big game winter habitat acres. About 70 miles of stream, in addition to that in the baseline projections, are affected by erosion from 1.4 million acres. Recreation-days for hunting and river and stream fishing are about 485,000 recreation-days below the baseline goals. Net revenue to the private sector from agriculture sales is $85.8 million more along with production costs which are $186.2 million more than the baseline.

Additional details for this alternative future can be found in the six tables relating to Alternative Future IV in Appendix B.

ALTERNATIVE FUTURE V SUMMARY

Alternative Future V responds to the question of importing Green River Basin water into the Platte Basin while simultaneously analyzing the Basin's capability to produce its share of national food and fiber. The displays show the effects of increasing the irrigation water supply to irrigated lands along the main stem of the North Platte River. About 398,000 acre-feet of water is imported to be used for irrigated agriculture. The year 2000 will be used as the focal point of the discussion. The effects shown are the results after the water has been imported and does not attempt to show effects or commitment required to get the water into the Basin.

For the goals of this alternative future to be met it will require a commitment from USDA and state and local resources. USDA will need a commitment of about 882 man-years and $14.8 million. Most of the man-year commitment would be for conservation land treatment (1,207,000 acres), increased irrigation efficiency (94,000 acres), and timber harvest (54,000,000 board-feet). Program dollars would be committed to conservation land treatment, proper land use change (395,000 acres), increased irrigation efficiency, developing full water supplies to irrigated land (197,000 acres), wilderness (164,000 acres), timber harvest, and forest land thinning and planting (81,900 acres).

The state commitment would generally be to the same activities. The state would also need a significant commitment to protecting about 845,000 acres of terrestrial habitat.

Significant local commitment would be needed for conservation land treatment, proper land use change, increased irrigation efficiency, developing full water supplies for irrigated land, developing irrigation systems to reduce return flows, and thinning and planting on forest land.

Comparing this alternative future with the Baseline Future shows several differences. Three types of crop production do not meet the baseline projections. These are native hay and pasture equivalent (short 89,000 tons), corn silage (short 98,000 tons), and sugar beets (short 174,000 tons). There are an additional 69,000 acres of irrigated lands in this alternative. Compared to the baseline, there are 33,000 more acres that receive a full irrigation water supply and 4,000 acres that have increased irrigation efficiency. Land conversion to irrigated agriculture is greater in this alternative future. Rangeland and dry cropland converted to irrigated land is about 45,000 acres more. Return flows from the 250,000 acres of irrigated land is 29,000 acres-feet more than the baseline. Surface erosion greater than 0.5 ton per acre per year comes from about 33,000 acres more than the baseline. Conservation land treatment in the form of minimum tillage, wind strip farming, contour farming and permanent cover is applied to 65,000 more acres than in the baseline. Combinations of practices such as minimum tillage and strip cropping may occur on the same piece of land. Thus some of the 65,000 acres may represent the same piece of land. Comparing the recreation aspects of the two shows a three mile loss in aquatic habitat and a shortage in river and stream fishing, and hunting of about 485,000 recreation-days. Net revenue for agricultural products for private sector is $4,034,000 more than for Baseline Future. Production costs are also more by $4.5 million.

Additional details for this alternative future can be found in the six tables relating to Alternative Future V in Appendix B.

ALTERNATIVE FUTURE VI SUMMARY

Alternative Future VI responds to the question of importing Green River Basin water. The Platte agricultural water supply is reduced by meeting municipal and industrial water needs. However, the imported Green River Basin water is used to meet the anticipated M&I water needs. The Platte supply is further reduced by simulating a drought limited supply. The Basin's capability to produce its share of the nations food and fiber is analyzed. The year 2000 will again be used as the focal point of the discussion.

The goals of Alterntive Future VI require a commitment from USDA of about 777 man-years, and $14,047,000; from the state of about $2,417,000; and from local sources of about $11,994,000.

USDA man-year commitment is mainly to conservaton land treatment (1,118,000 acres), increased irrigation efficiency (70,000 acres), and timber harvest (54,000,000 board-feet). Program dollars commitment would mainly be to conservation land treatment, proper land use change (366,000 acres), increased irrigation efficiency, developing full water supply to irrigated land (152,000 acres), system development to reduce irrigation return flows, wilderness (164,000 acres), timber harvest and forest thinning and planting (81,900 acres).

State program dollars commitment would mostly be to the same activities as USDA. The state would also need a significant commitment to about 845,000 acres of terrestrial habitat.

Significant local dollar commitment would need to be made to conservation land treatment, proper land use change, increased irrigation effficiency, full water supply for irrigated crops development, systems to reduce irrigation water return flows, and thinning and planting of forest lands.

This alternative future compared against the Baseline Future shows several areas of significant difference. Native hay and pasture equivalents fail to reach the baseline goal by 275,000 tons. Corn silage and sugar beet production also fall short of the goal by 138,000 tons and 161,000 tons, respectively. Total irrigated land is about 24,000 acres less. Also below the baseline projection is increased irrigation efficiency by nearly 20,000 acres and irrigated land with a full water supply by 12,000 acres. Irrigation return flows show a drop of nearly 3,000 acre-feet. However, acres with return flow show an increase of 42,000 acres, and surface erosion greater than 0.5 ton per acre per year show an increase of 6,000 acres. Recreation in the form of flat water fishing, boating, swimming and water skiing shows an excess of 353,000 recreation-days, while stream and river fishing, and hunting shows a deficiency of 485,000 recreation-days. Both net revenue and production costs are less than the Baseline Future. Net revenue to the private sector for agricultural production is $869,000 less and production costs are $1,338,000 less.

Additional details for this alternative future can be found in the six tables relating to Alternative Future VI in Appendix B.

ALTERNATIVE FUTURE NATIONAL ECONOMIC DEVELOPMENT SUMMARY

The National Economic Development (NED) Alternative Future maximizes agricultural production in the Basin. The Basin is not constrained to producing its share of national food and fiber. Water development projects are allowed to be developed that supplement late season water supplies. The year 2000 is used as the focal point of the discussion.

The commitments required to reach the goals of the NED Alternative Future are the most dramatic of all the alternative

futures analyzed. USDA would be required to make a commitment of 3,050 man-years and nearly $28 million to programs. The state would need to commit nearly $12 million and local sources would need to commit almost $53 million.

USDA commitment in both man-years and program dollars would mainly go to conservation land treatment (4,880,000 acres), proper land use change (2,719,000 acres), increased irrigation efficiency (145,000 acres), full water supply development for irrigated land (256,000 acres), irrigation systems to reduce return flows (140,000 acres), rangeland treatment (5,493,000 acres), and timber harvest (54,000 ,000 board-feet). In addition, USDA would need to make a significant program dollar commitment to wilderness, reduction in agricultural flooding and forest thinning and planting.

The state and local commitments would be to similar activities as the USDA commitment. Also the state would need to make a significant commitment of program dollars towards terrestrial habitat. Most of the local commitment would be to irrigation related activities, such as increased irrigation efficiency, developing full water supplies for irrigated land and installation of systems to reduce irrigation water return flows.

As might be expected, this alternative future has considerable differences when compared to the Baseline Future. The main reason for the differences is that this alternative future is not constrained to producing the Basin's share of agricultural food and fiber. Crop production exceeds the baseline projection in all areas except native hay and pasture equivalent, where production is 227,000 tons short. Small grain (barley, oats, and wheat) exceed the baseline projections by nearly 27.4 million bushels. Alfalfa production exceeds the baseline goals by 3.9 million tons, dry beans by 724,000 hundred weight, corn by 29,000 bushels, corn silage by 424,000 tons, potatoes by 6.8 million hundred weight and sugar beets by 264,000 tons. Irrigated land is 98,000 acres more. This includes nearly 15,000 more acres converted from rangeland to irrigated cropland. More irrigated land (164,000 acres) is contributing to return flows than in the Baseline Future, even though the amount of return flows is about 33,000 acre-feet less. Land receiving a full water supply increases 92,000 acres and irrigation systems to reduce return flows are applied to 140,000 more acres. About 55,000 more acres have increased irrigation efficiency than does the baseline.

Rangeland converted to dry cropland is 2.3 million acres more than the baseline. Conservation land treatment on both irrigated and dry cropland is more in all measured practices, except the amount in permanent cover. When compared to the baseline minimum tillage is nearly 3 million acres more, wind strip cropping is 179,000 acres more, contour farming is 619,000 acres more and permanent cover is 41,000 acres less. Combinations of practices such as minimum tillage and strip cropping may occur on the same piece of land. Thus, some of the acres may represent the same

land. Nearly 5.4 million more acres of rangeland receive treatment than in the baseline projections. This includes 252,000 acres of critical big game winter range. Livestock use of critical big game winter range increases by 17,000 animal unit months, which results in a loss to big game winter range of nearly 250,000 acres. Surface erosion of amounts greater than 0.5 ton per acre per year increases by 1,512,000 acres. This leads to a loss of nearly 73 miles of streams suitable for aquatic species.

Recreation in the form of flat water fishing, boating, swimming and water skiing exceeds the baseline goals by 353,000 recreation-days. However, river and stream, hunting, wilderness and backcountry experience fall below the baseline by 597,000 recreation-days.

As compared to the Baseline Future, antelope, deer, and grouse habitat index is up. Forest land quality indexes are down for air quality, and development and use quality. They are up for water quality and wildlife quality.

Perhaps the most dramatic difference between the NED Alternative Future and the Baseline Future is net revenue and production costs. Net revenue for agricultural production is about $138.9 million greater than the baseline. Production costs are $195.6 million more.

Additional details for this alternative future can be found in the six tables relating to Alternative Future National Economic Development in Appendix B.

ALTERNATIVE FUTURE ENVIRONMENTAL QUALITY SUMMARY

The Environmental Quality (EQ) Alternative Future displays the effects of reducing the levels of soil erosion on resource use and income. The Basin is limited to producing no more than its historical share of national agricultural food and fiber. The year 2000 is used as the focal point of the discussion.

The commitment by USDA to reach the goals of this alternative future is 828 man-years, and $9.6 million. At the same time, the state would need to commit $2.5 million and local sources would need to commit $15.1 million.

The man-year commitment by USDA would mainly be used in conservation land treatment (1,137,000 acres), increased irrigation efficiency (88,000 acres), and timber harvest (54,000,000 board-feet). Program dollar commitments, in addition to the above activities, are to development of full irrigation water supply (166,000 acres), irrigation systems to reduce return flows (74,000 acres), wilderness (178,000 acres), and forest thinning and planting (17,400 acres).

State commitment is to conservation land treatment, proper land use change (358,000 acres), increased irrigation efficiency, development of full irrigation water supply, protection of terrestrial

habitat (840,000 acres), and timber harvest. Local commitment would be to the same activities along with irrigation systems to reduce return flows.

When comparing this alternative future to the Baseline Future crop production falls short in only three areas. The shortages are in native hay and pasture equivalent (242,000 tons), corn silage (141,000 tons), and sugar beets (152,000 tons). There is a reduction in total irrigated acres by 2,000 acres. However, irrigation return flows increase by 7,000 acre-feet, along with area contributing to return flows (63,000 acres).

Perhaps the largest change from the baseline projections is the reduction in annual soil erosion greater than 0.5 ton per year per acre. With the reduction in soil erosion an additional 149 miles of streams came into the protected aquatic category.

Rangeland treatment occurs on 17,000 acres more than in the Baseline Future. However, rangeland production of animal unit months falls about 381,000 AUMs short of the baseline projection.

Flat water fishing, boating, swimming, and water skiing recreation is 353,000 recreation-days above the baseline projections. River and stream fishing, hunting, wilderness and backcountry recreation is 558,000 recreation-days below the baseline.

Net revenue and production costs are both below the baseline projections. Net revenue to the private sector from agricultural sales is $1.95 million below and production costs are $1.1 million below.

Additional details for this alternative future can be found in the six tables relating to the Alternative Future Environmental Quality in Appendix B.

CHAPTER 3

IMPLEMENTATION

CHAPTER 3

IMPLEMENTATION

As stated in Chapter 1, Land Use Planning Process Group, Integrate Land Use Planning Concern, page 1-121, a selected USDA program plan for water resource development was not constructed. Instead, alternative futures were analyzed. Within these alternative futures there are portions that USDA programs could assist in implementing. Implementation depends upon analysis of specific sites (interest, leadership, and financial ability of local people) and congressional action to fund appropriate programs. Also included in implementation would be the need to further use the tools developed during the course of this study that address integration of land use planning. If these tools are to be of any use beyond the scope of the Platte River Basin Cooperative Study, training of local, state and federal planners would need to be done.

USDA PROGRAMS

Forest Service

Multiple Use - Sustained Yield Act

Recreation

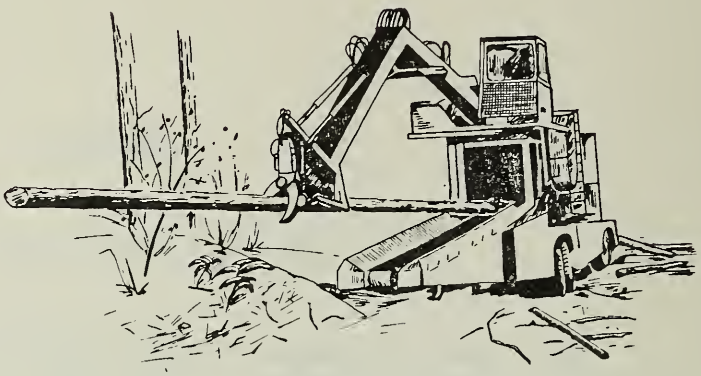
This Act provides for the management and development of the recreation resource on national forests. Forest Service recreation programs are coordinated with the private sector and other government agencies to avoid duplication of effort.

Rangeland

Under authorities of this Act, forest resources on national forest lands are managed to conserve the land and its natural vegetation while providing feed for livestock and wildlife. Under the multiple use management concept, grazing lands are also required to be managed for their watershed, wildlife, and recreation values. Programs for rehabilitating low-condition forest range areas to increase the potential for forage production are an important part of the Forest Service range programs.

Timber Management Program

This program includes the various management practices designed to improve the vigor, stocking, composition, productivity, and quality of forest stands. A goal of timber management is to make forest more profitable through sustained production of more and better timber products.



Watershed Improvement Program

This program involves planning and implementing measures for the protection, conservation, and improvement of land and water resources. Through cooperative programs with state and local governments, and private landowners, the Forest Service participates in the protection, management, and use of forest and associated watershed lands. Through Public Law 566 assistance is provided for gully stabilization, erosion control, rehabilitation of abandoned roads and trails, restoration of mined areas, and timber stand improvement on state and private lands.

Cooperative Forestry Assistance Act of 1978 - Public Law 95-313

Under this program the Forest Service is authorized to work through and in cooperation with State Foresters and equivalent State officials in implementing Federal programs affecting non-federal forest land by providing assistance in (1) the advancement of forest resource management; (2) the encouragement of the production of timber; (3) the prevention and control of insects and diseases affecting trees and forests; (4) the prevention and control of rural fires; (5) the efficient utilization of wood and wood residues, including the recycling of wood fiber; (6) the planning and conduct of urban forestry programs; and (7) the improvement and maintenance of fish and wildlife habitat.

This program complements the policies and directions set forth in the Forest and Rangeland Renewable Resource Planning Act of 1974.

Soil Conservation Service

Assistance to Conservation Districts - Public Law 46

Under the authorities of this program, the Soil Conservation Service through local conservation districts assists both individuals and groups in the planning and application of needed soil and water conservation on private lands. This Act can provide technical assistance to landowners for conserving land and water resources in the Basin in the national interest.

Small Watershed Program - Public Law 566

Under the authorities of this program, USDA agencies provide assistance to sponsoring local organizations in planning and carrying out a program for the development, use, and conservation of the soil and water resources of a small watershed area. This includes treatment and protection of federally-owned land within such watershed areas.

Great Plains Conservation Program

USDA assistance under this program is designed to accelerate the application of needed conservation practices to conserve land and water resources on private land. The program can provide cost-sharing to help offset the cost to landowners in the designated Great Plains counties. All the counties in the Basin, except for Fremont County, are designated as Great Plains counties.

Resource Conservation and Development Program

The Resource Conservation and Development Program (RC&D) administered by the Soil Conservation Service is designed to expand the economic opportunity for people in approved planning areas. Under the program, USDA agencies provide technical, cost-sharing, and loan assistance to local sponsors by developing and carrying out action plans for conservation improvement, development, and wise use of natural resources.

Rural Abandoned Mine Program

The Rural Abandoned Mine Program (RAMP) is one of four programs authorized by Title IV of Public Law 95-87 to reclaim abandoned coal mine lands. RAMP is geared to deal primarily with small areas of abandoned coal mined land that are in private ownership.

The program uses existing Soil Conservation Service assistance to help landowners develop reclamation plans and apply conservation treatment for the reclamation, conservation, and development of coal mined land and water. Cost-sharing is provided to landowners for establishing conservation treatment through long-term contracts according to the reclamation plan.

The Office of Surface Mining has the overall administrative responsibility for the program.

Soil Surveys

The objective of soil surveys, administered by the Soil Conservation Service, is to provide published soil surveys of counties or other comparably sized areas for widespread use by interested agencies, organizations, and individuals. Soil surveys are of vital importance to planners, engineers, zoning commissions, tax commissions, homeowners, developers, and landowners. They are used to locate soils suitable for homesites, subdivisions, commercial and industrial sites, farms, wildlife and recreation areas, prime agricultural land, highways, and airports.

Snow Surveys

The objective of this Soil Conservation Service administered program is to make and coordinate snow surveys and prepare forecasts of seasonal water supplies in affected streams for the purpose of relating available water supply to agricultural, industrial and municipal plans and operations.

Rural Clean Water Program

The Rural Clean Water Program (RCWP) provides long-term technical and financial assistance to owners and operators having control of rural land. The purpose of this assistance is to install and maintain best management practices to control agricultural nonpoint source pollution for improved water quality.

Other USDA Programs

Agricultural Conservation Program (ACP)

The ACP administered by the Agricultural Stabilization and Conservation Service provides funds for cost-sharing with individual and groups of landowners and operators for the tallation of conservation practices.

Farmers Home Administration Loan Programs (FmHA)

The Farmers Home Administration is authorized to make loans to various non-federal landholders for the implementation of various land and water development measures. Landholders eligible for these loans are public and quasi-public bodies, nonprofit corporations, and private individuals or groups owning land. Loan assistance is available for the development of recreation areas, irrigation and flood prevention facilities, and forestry and land treatment measures, Loans from FmHA may be used to pay the local share of most watershed projects and RC&D measures.

Science and Education Administration - Federal Research

The programs of the Science and Education Administration - Federal Research (SEA-FR) require them to conduct research and

development work on the production, utilization, and marketing of agricultural products, on human nutrition and on other matters of concern to consumers. They also conduct regulatory programs involving the enforcement of plant and animal quarantines.

The farm research the SEA-FR conducts is their most important function in relationship to this report. Farm research is conducted to improve methods of soil and water management; to improve field and horticultural crops in areas not specifically related to objectives of this study.

Science and Education Administration-Extension

The Wyoming Extension Service is part of the Federal-State Cooperative Extension Service partnership. Federal, state, and county governments share in financing, planning and carrying out information and education programs. The Extension Service acts as the educational agency of the USDA. State extension specialists and county agents cooperate with other agencies to provide local information relating to conservation programs, weed control, crop culture, animal culture, herbicides, pesticides, fertilizers, homemaking, and other types of information and assistance.

Economics, Statistics and Cooperatives Service

The Economic Research group conducts national and regional programs of research, planning and technical consultation and services pertaining to economic and institutional factors and policies which relate to the use, conservation, development, management and control of natural resources. This includes estimating the extent, geographic distribution, productivity, quality and contribution of natural resources to regional and national economic activity and growth. Also included are: resource requirements, development potentials and resource investment economics; impact of technological and economic change on the utilization of natural resources; resource income distribution and valuation; and the recreational use of resources.

AGENCY PROGRAMS OUTSIDE USDA

Wyoming State Conservation Commission

The Wyoming State Conservation Commission assists and guides 39 conservation districts throughout Wyoming, of which 15 are partly or wholly within the Basin, in the development of conservation education programs, information programs, and total resource conservation programs to promote multiple and wise use of our natural resources in urban and rural development. Each conservation district is governed by five local citizens. Conservation of soil and water resources is improved as districts assist in irrigation projects, mine reclamation, soil surveys and conservation planning for individuals, groups and units of government.

The Wyoming State Conservation Commission is the state agency designated by the Governor to review and approve small watershed projects and RC&D project applications and plans. The Commission sets the priorities and direction for Soil Conservation Service activities on small watershed projects. The Commission may also assist in accelerating work on these projects by employing consultants to acquire basic information for preliminary investigations of feasibility.

Wyoming Department of Agriculture

The State Department of Agriculture is assisting agriculture in Wyoming to meet the needs of the present and future and to add to the economy of the state. Departmental programs related to land and water and related resources development are described below.

Division of Markets

The Division of Markets furnishes technical assistance in the fields of transportation, marketing and statistical information to assist in the development of feasible programs with regard to freight rates, agribusiness, export and import of all agricultural products. The division has the responsibility of grading and inspection of produce entering and leaving the state. The Weights and Measures Section of this division inspects and tests all commercial weighing and measuring devices in the state and checks the correct quantity and weight of products and merchandise offered for sale.

Division of State Laboratories

The Division of State Laboratories located on the University of Wyoming campus at Laramie furnishes the expertise and equipment necessary to analyze fertilizers, pesticides, drugs, feeds, water potability, food or any commodity as it pertains to humans or animals.

Division of Agricultural Planning and Development

The Division of Agricultural Planning and Development has a responsibility to help the development of the agricultural sector of the state's economy. This is accomplished through conducting economic and statistical studies, planning for agricultural development, public involvement, information and education programs. These activities are done in coordination with various agencies of local, state and federal governments.

Wyoming Department of Economic Planning and Development

The Wyoming Department of Economic Planning and Development (DEPAD) is charged with the planning and develoment of the physical and economic resources of the state. The department consists of

the office of economic planning and development; divisions of water, industrial and mineral development; and the board of economic planning and development.

The division of water development is responsible for activities in connection with state financial assistance for water development projects. It determines engineering and economic feasibility in order to base recommendations to the Wyoming Farm Loan Board for loan approval. Loans in an amount not to exceed $150,000 are available to court approved water districts with taxing authority, agencies of state and local government, persons, corporations and associations in Wyoming.

The division of industrial development is responsible for investigations and preparing plans and specifications for development in connection with any resource of the state, industry or business within the state. It also is charged with attracting new industry into the state. The division makes studies of soil and its uses, and studies to promote and protect the forest and range areas within the state.

The division of mineral development makes studies of all mineral resources, mines and mining, the exploration, development, conservation and production of oil and gas and other minerals, and prepares state legislation pertaining to the mineral resources of the state.

The chief of state planning is responsible for the comprehensive state plans for the physical and economic development of the state.

Wyoming State Forestry Division

The Wyoming State Forestry Division administers and manages all forested state lands, participates in cooperative state-federal forestry programs, and provides assistance to private landowners. Major activities in assistance to private landowners are for fire control, forest management, pest control and tree planting. This office cooperates with federal agencies in assisting in the planning of small watershed projects and resource conservation and development project measures.

Wyoming State Engineer

The State Engineer is responsible for the supervision of the state's water resources. Water may not legally be diverted from any natural source until a permit is obtained from the State Engineer. The Board of Control, with the State Engineer as president, adjudicates water rights and provides the field supervision of water rights and uses. The State Engineer is also responsible for the coordination of state water resources planning. The Wyoming Water Planning Program has developed a Framework Water Plan. The State Engineer is cooperating in development of this river basin cooperative study.

Wyoming Public Service Commission

There are three areas of water and related land resource development where the Public Service Commission has programs. They are: (1) rural, domestic and livestock water supply; (2) municipal and industrial water supply; and (3) rural power supply. The commission is charged by law with the regulation of all utilities in the State of Wyoming, including water utilities and Rural Electric Associations. Individuals, companies or associations that intend to provide a utility, commodity or service to the public must first obtain a certificate of public convenience and necessity from the commission. The commission does not provide financial assistance.

Wyoming Game and Fish Department

The State Game and Fish Department is authorized to enter into cooperative agreements with federal agencies, corporations, associations, individuals and landowners for the development of state control of wildlife management and demonstration projects. Many public access areas for hunting and fishing have been established through this program. The department cooperates with USDA agencies in providing technical assistance to landowners who want to improve fish and wildlife habitat.

Wyoming Recreation Commission

The Wyoming Recreation Commission administers five state parks in the Basin. They are Glendo, Curt Gowdy, Guernsey, Independence Rock, and Seminoe State Parks which encompass nearly 52,000 acres. It also administers the Land and Water Conservation Fund through which financial assistance is provided to tax-based legal entities for the development of outdoor recreation areas and facilities. The Commission administers state-owned historic sites, which include Fort Fetterman, Fort Fred Steele, and South Pass City; monuments and markers; the Historical Preservation Fund; and the Snowmobile Registration Act.

Wyoming Department of Environmental Quality

The Director of the Department of Environmental Quality is responsible for administering State programs involving land, air, and water quality as required by the Wyoming Environmental Quality Act. The Division of Air Quality has as its primary goal the protection and enhancement of Wyoming's air resource. The major activities of the Air Quality Division include a construction and operating permit program, a source inspection and surveillance program and an ambient and emmissions monitoring program.

The Land Quality Division is responsible for State programs dealing with surface mining and reclamation. The Land Quality Division activities include the mining permit program, monitoring and surveillance of mining operations, a bonding program for mine reclamation and reclamation of land affected by mining activities.

The Division is also responsible for the coordination of all State programs concerned with solid waste management. The activities include administration of a permit program, on-site inspection and enforcement, hazardous material spills and training.

The Water Quality Division is responsible for protecting the quality of the State's waters. Division activities include water quality management planning; permit program to construct and operate treatment facilities; permit program dealing with discharge of wastes to waters of the state; water quality monitoring; municipal construction grants; operator training and certification; and public water supply.

Special Purpose Districts

Districts are political subdivisions of the State of Wyoming. Several single purpose districts such as irrigation districts, drainage districts and flood control districts may be created under state law. Others such as conservation districts, watershed improvement districts and watershed conservancy districts can be multipurpose in nature. Each kind of district has unique powers and limits of power. Conservation districts promote the wise use of water and related land resources through the cooperative action of landowners. They secure technical assistance from the SCS or other agencies, help cooperators secure needed supplies and materials not readily available, and sometimes secure special equipment needed to apply conservation practices on the land. Watershed improvement districts are usually formed to provide local sponsorship, leadership, land rights and funds for watershed projects.

U. S. Department of Interior

Bureau of Land Management

Bureau of Land Management (BLM) activities in the field are administered through District Offices in Worland, Casper, Rock Springs, and Rawlins. The Districts are divided into Resource Areas with some having detached offices. The Casper and Rawlins Districts each manage large acreages of public land within the Platte River.

BLM's primary responsibility is the conservation and development of natural resources. Its basic programs include: lands; minerals; rangeland; forestry; watershed; recreation and wildlife habitat.

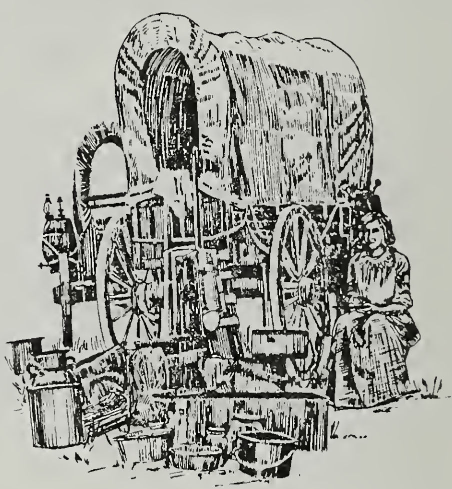
All other BLM activities support these resource programs. They include construction and maintenance of facilities, cadastral survey, fire protection, land records maintenance and reality service.

In 1976 with the passage of the Federal Land Policy and Management Act, also known as the Organic Act, some 3,000 outmoded

laws were superceded which greatly streamlined the BLM's administrative policies. Under this Act federal lands are to be managed under multiple use and sustained yield principles protecting both the quality of the resources and environment. Land use planning and environmental assessment on federal land will be major responsibilities of the BLM in future years in implementing this Act.

Heritage Conservation and Recreation Service

The Heritage Conservation and Recreation Service (HCRS) coordinates federal recreation programs and administers matching grants to states for state and local outdoor recreation planning, land acquisition and development projects. In addition, it can provide matching funds for the restoration and development of cultural resources. It can advise on a wide range of problems involved in state, county, and regional outdoor recreation programs.



Water and Power Resources Service - (Bureau of Reclamation)

This agency has been very active in water development and conservation programs over the years. Though concerned primarily with large-scale water development programs involving multipurpose structural measures, it also administers a small projects loan program. This program allows organized entities such as irrigation districts and other agricultural water districts to obtain long-term financing for irrigation facility improvements. This would include such measures as canal lining, system reorganization and structure rehabilitation.

Fish and Wildlife Service

This agency carries out a continuing soil and moisture conservation program on federal wildlife refuges and game ranges that it administers. Watershed needs on their acquired lands are fulfilled under their own programs while those problems on the public lands within the refuges are carried out cooperatively with the land administering agency. Consultation with the FWS Office of Endangered Species, as required by the Endangered Species Act amendments of 1978, is required for any development projects involving federal funds.

Geological Survey

This agency through cooperative agreements with the states and other agencies has maintained a systematic collection of streamflow data at a vast number of stream gaging stations throughout the region. They also collect water use information, analyze ground water conditions, maintain lake and reservoir stage-capacity gages and make available other hydrologic data that are vital to watershed programs.

Department of Defense

Army Corps of Engineers

The Army Corps of Engineers has been responsible for the general flood control programs throughout the United States since 1936, and is expected to continue investigations of flood and related water resource problems in the Basin, and to assist local interests in emergency flood control action. The Corps is charged with the responsibility of regulating the discharge of dredge or fill material into waterways of the United States. In accordance with Section 404 of Public Law 92-500, a regulatory permit system has been implemented to protect waterways and wetlands from degradation associated with altering the character of these valuable resources. Bank protection measures and other channel, or wetland modifications should be coordinated with the Corps.

ALTERNATIVE FUTURE IMPLEMENTATION

To implement any one or part of any of the alternative futures as discussed in Chapter 2 will require commitment of resources, man-years and money. Table 3-1 shows these commitments for the eight alternative futures discussed.

Part of the implementation of any or all of the alternative futures could include projects that were investigated during the course of the study. Twenty-seven individual watersheds were investigated in detail to determine feasibility for project type action to solve existing problems and needs. Table 3-2 shows a summary of results of the watershed investigations.

Table 3-1 Alternative Future Implementation - Year 2000
Platte River Basin, Wyoming

Alternative Future Element	Units 1,000	I	II :75% Return: Flow Allowance	III	IV :75% Return: Flow Allowance	V Import Gr.: Riv. Water 100% Incr.	VI	NED	EQ
Conservation Land Treatment 1/	Acres	1,142	1,081	1,140	4,529	1,207	1,118	4,880	1,137
Land Use Change	Acres	375	340	376	2,620	395	366	2,719	358
Increased Irrigation Efficiency	Acres	90	48	88	72	94	70	145	88
Full Irrigation Water Supply	Acres	164	145	162	209	197	152	256	166
Zero Discharge Systems	Acres	70	127	70	209	65	64	202	74
Rangeland Treatment	Acres	38	38	38	5,583	38	38	5,493	55
Critical Winter Range Improved Mgt.	Acres	38	38	38	287	38	38	290	38
Protected Aquatic Animal Habitat	Miles	0.318	0.327	0.316	0.248	0.315	0.317	0.245	0.486
Protected Terrestrial Animal Habitat	Acres	845	845	845	596	845	845	593	845
Boating, Swimming, Water Skiing	RD	1,273	1,273	1,273	1,273	1,273	1,273	1,273	1,273
Wilderness	Acres	164	164	164	164	164	164	63	178
Timber Harvest	MBF	54	54	54	54	54	54	54	54
Forest Thinning and Planting	Acres	81.9	81.9	81.9	81.9	81.9	81.9	121.9	17.4
USDA Commitment	Man-Years	0.806	0.839	0.826	2.891	0.882	0.777	3.050	0.828
USDA Commitment	Program $	14,279	14,625	14,378	23,771	14,769	14,047	27,988	9,676
State Commitment	Program $	2,505	2,611	2,560	11,562	2,737	2,417	12,158	2,474
Local Commitment	Program $	13,747	16,519	14,423	42,802	17,058	11,994	52,793	15,059

1/ Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Table 3-2 Summary of Watershed Investigations
Platte River Basin, Wyoming

Watershed	Watershed Group 1/	Feasibility	Purpose	Major Features	Average Annual Benefits	Average Annual Cost
					----------Dollars---------	
Laramie	37	No	Flood Protection	Diversion Structures, Floodways, Flood Detention	88,250	102,850
Brush Creek	5	No	Supplemental Irrigation Supply	Irrigation System Reorganization; Storage Structure	--	340/AF
Spring Creek Lake	3	Yes-RD 2/	Supplemental Irrigation Supply	Storage Reservoir, Supplemental Supply 8,900 acres	689,700 2/	399,000
Jack Creek	6	Yes-RD 2/	Supplemental Irrigation Supply	Storage Reservoir, Supplemental Supply 3,400 acres, Develop 860 irrigated acres	518,500 2/	421,800
Sage Creek	7	No	Sediment Detention	Sediment Retention Reservoirs	-- 3/	152,800
Coad Mountain	8	No	Supplemental Irrigation Supply	4/	-- 4/	-- 4/
Wood Mountain	2	No	Supplemental Irrigation Supply	Storage Reservoir, Supplemental Supply	-- 5/	-- 5/
Bates Creek	16	Yes	Supplemental Irrigation Supply	Storage Reservoir, Supplemental Supply to 3,100 irrigated acres	217,100	207,400
Reno Hill	17	No	Supplemental Irrigation and Flood Protection	Storage Reservoir, Supplemental Supply to Irrigated Land, Urban Flood Protection	511,000	1,373,000
Boxelder	18	No	Supplemental Irrigation Supply	Storage Reservoir, Supplemental Supply to Irrigated Acres	113,500	366,400
Douglas	19	Yes	Flood Protection	Diversions and Floodways to Protect Urban Areas	145,100	129,600
LaPrele Creek	20	Yes	Supplemental Irrigation Supply	Reorganization of Existing Distribution System 6/	140,800	102,070
Wagonhound	20	No	Supplemental Irrigation Supply	7/	-- 7/	-- 7/
LaBonte	21	No	Supplemental Irrigation Supply	Storage Reservoir	77,200	317,200
Horseshoe	23	Yes	Supplemental Irrigation Supply	Storage Reservoir, Supplemental Supply to 2,860 Acre: Develop 570 irrigated acres	249,400	229,700
Cottonwood	24	No	Supplemental Irrigation Supply	8/	-- 8/	-- 8/
Pioneer Canal	38	Yes	Water Supply	Rehabilitation of Distribution System that Supplies Water to 14,600 Acres	286,200	142,600
Snowy Range	9	No	Supplemental Irrigation Supply	9/	-- 9/	-- 9/
Rock River	41	No	Supplemental Irrigation Supply	10/	-- 10/	-- 10/
Sugarloaf Mountain	28	Yes	Supplemental Irrigation Supply	Storage Reservoir, Supplemental Supply to 1,745 Acre	81,700	55,410
Bluejay Mountain	28	No	Supplemental Irrigation Supply	11/	-- 11/	-- 11/
Sybille	29	Yes	Water Supply	Conveyance and Distribution System Improvement	593,000	184,500
Chugwater	30	No	Supplemental Irrigation Supply	12/	-- 12/	-- 12/
Molly Fork	25	Yes	Flood Protection	Floodwater Detention Reservoir	86,600	84,700
Corn Creek	27	No	Irrigation Development	Develop 15,000 Acres of New Irrigated Land	-- 13/	-- 13/
Horse Creek	32	No	Supplemental Irrigation Supply	14/	-- 14/	-- 14/
Mesa Mountain	34	No	Flood Protection	Detention Reservoir, Channel Work	-- 15/	-- 15/

Footnotes to Table 3-2:

1. Watershed Groups - Watershed Groups Map can be found in Chapter 1, page 1-6.

2. Feasibility - This project is not feasible on a national economic development scale; but when regional economic effects are considered, the project becomes feasible. Benefits shown include regional economic effects.

3. Average annual benefits were not determined.

4. Major features, benefits, and costs were not determined because the limiting resource in this watershed is water.

5. Average annual benefits and costs not determined because of high structural costs compared to the benefited area.

6. The project area is the irrigated land that is served by water stored in the LaPrele Reservoir.

7. Major features, benefits, and costs were not determined because the limiting resource in this watershed is water.

8. Major features, benefits, and costs were not determined because the limiting resource in this watershed is water.

9. Major features, benefits, and costs were not determined because a storage site above the irrigated land could not be found.

10. Major features, benefits, and costs were not determined, because the limiting resource in this watershed is water.

11. Preliminary investigation in connection with a proposed Public Law 566 Watershed Project indicates no feasible project for USDA. The watershed investigation found no evidence to change the conclusion of the Preliminary Investigation.

12. Major features, benefits, and costs were not determined, because the limiting resource in this watershed is water.

13. Four alternatives were analyzed. Annual benefits ranged from $1.9 million to $2.6 million. Costs ranged from $2.6 million to $3.6 million. The benefits did not include the regional economic effects.

14. Major features, benefits, and costs were not determined because the limiting resource in this watershed is water.

15. Benefits and costs not determined.

GLOSSARY

GLOSSARY

The terms used in this report include definitions taken from the "Resource Conservation Glossary", Soil Conservation Society of America, 1970; "Wildland Planning Glossary", General Technical Report PSW - 13/1976, Pacific Southwest Forest and Range Experiment Station, USDA Forest Service, 1976; and from definitions especially prepared for this report.

Alternative Future - Unlike a scenario which is constructed for examining specific casual relationships or to aid in making a specific decision, an alternative future in this report is an all-inclusive description of what it is believed the planning region will be like if a possible course of action is followed.

Alternative Future Commitment - To meet the goals of an alternative future requires a commitment of Basin natural resources, man-power, and dollars. Data used to derive the commitment came from the Resource Conservation Act (RCA) statewide planning effort in progress. The RCA worksheet No. 2 provided updated information on program identification, costs, and technical assistance for the RCA job needing to be done. This information was used to develop standard factors that could be used as multipliers for the alternative futures. Similarly, information from the Resource Planning Act (RPA) and the Watershed Investigation Reports (WIRs) were used.

Assumption Indices - A set of assumptions used to construct an alternative future. Twenty-five assumption indices make up each alternative future in the Platte Study.

AUM - Animal unit month is a measure of forage or feed required by one mature cow (1,000 pounds) or the equivalent for one month.

Backcountry Experience - A recreation activity that takes place in a backcountry setting. A backcountry setting is an area where management objectives stress nonmotorized recreation activities such as hiking, backpacking, camping, birdwatching, and fishing. The roads are closed to public traffic, but are used for administrative purposes and clean up operations.

Baseline Future - A set of conditions used to serve as a base from which to measure the impacts various alternative futures would have in the Basin.

Basin - Basin used in this study includes all the area drained by the North and South Platte Rivers and the Niobrara River within the State of Wyoming.

Benefits - An assessment of the value of the expected outputs or the desirable effects of a plan or action.

Big Game Habitat Indices - A rating system developed to rate rangeland with wildlife habitat. Each of the Basin's mapped rangeland codes were rated as to habitat for elk, deer, antelope, and sage grouse. The rating index varied from zero to five, with five indicating a high habitat rating and zero indicating a low habitat rating.

BLISTORS - An acronym meaning Basic Land Information Storage and Retrieval System. This computerized system was used in the Platte Study to store about 6 million pieces of inventory information for the 15.8 million acres in the Basin.

Commitment - An anticipated obligation required to reach the goals of an alternative future. In reality, commitment is dependent upon the availability of the resources and upon the directives of the U.S. Congress and the State Legislature.

Compact - An agreement or covenant between two or more parties.

Constrained Production - Production in the basin is limited to the baseline future projections for food, fiber, goods, and services.

Cooperative River Basin Study - A study conducted at the request of a state by the USDA. Studies are authorized by Section 6 of P.L. 83-566. Agencies within the USDA that are cooperating in these agricultural related studies are the Soil Conservation Service, Forest Service, and Economics, Statistics and Cooperatives Service (Economics).

Costs - The negative (adverse) effects. Costs may be monetary, social, physical, or environmental in nature.

Critical Rangeland - Rangeland that has been identified by the Wyoming Game and Fish Department as being critical winter big game habitat.

Decree - A court order usually having the force of law.

Demand Schedule Projections - The relationship between price and quantity demanded. The demand schedule expresses how much of the goods or services would be bought or consumed at various prices at a particular point in time.

Discounting - The present value of something to be received at some future date. Discounting is made for the purpose of obtaining the present worth of some future value.

Discount Rate - The interest rate used to develop factors to be used in plan formulation, and evaluation for discounting future benefits and costs, or otherwise converting benefits and costs to a common time basis.

Environmental Quality (EQ) - Enhancing environmental quality by the management, conservation, preservation, creation, restoration, or improvement of the quality of certain national and cultural resources and ecological systems is one of the two main objectives for programs involving water and related land resources administered by Federal agencies whose activities involve planning and devolopment of water resources, as contained in the Water Resources Council Principles and Standards.

Environmental Quality Account - One of the four required accounts for categorizing, displaying, or accounting the beneficial and adverse effects of each alternative future for water and related land resources planning specified in the Water Resources Council's Principles and Standards, and the USDA's "Procedures" for adhering to them.

An evaluation of environmental quality effects should include: (1) areas of natural beauty; (2) water, land, and air quality; (3) biological resources and selected ecosystems; (4) geological, archeological, and historical resources; and (5) irretrievable commitments of resources to future use.

Externalities - A cost or benefit that occurs whenever the activities of one or more persons affect the welfare or production functions of others who have no direct control over that activity.

Futures Foregone - Commitment of a resource to one use, such that it precludes its being available for some other future use.

Futures Foregone Score - A mathematical estimate of the degree of loss. The larger the number the greater the loss from the present condition. The score is the ratio of the present condition divided by the alternative future being analyzed condition.

Gross National Product (GNP) - The monetary value of the total output of goods and services within a country in a given period of time, usually a year. Its value does not include allowances for depreciation or the consumption of capital goods.

Irrigation Type - All of the presently irrigated cropland in the Basin has been classified into one of five irrigation types. Criteria used in the classification includes crops grown; water supply; irrigation systems; climate, soils, and water supply limitations; major needs; and typical locations. Type I is considered high, with Type V being considered low.

Land Use Change - Changing from one land use to another land use, such as converting dry cropland to irrigated cropland. See Table 1-10 for types of land use change.

Linear Programming - Linear programming is a planning tool or guide which can be used when an alternative must be selected from among a large number of alternatives. It utilizes mathematical techniques to find the "best" alternative where the planner specifies the framework and restraints on the alternatives.

Range Condition - The state and health of the range based on what it is naturally capable of producing.

Range Condition Class - One of a series of arbitrary categories used to classify range condition, usually expressed as either excellent, good, fair, or poor.

RARE II - An acronym for Roadless Area Review Evaluation. This is the second evaluation designed to make land allocations for wilderness in the context of national need for development and community dependence.

Recreation-Day - A standard unit of use for an area or activity consisting of a visit by one individual to a recreation development or area for recreation purposes during any reasonable portion or all of a 24-hour period.

Regional Economic Development Account - One of the four required accounts for categorizing, displaying, or accounting the monetary beneficial and adverse effects on a region (Platte River Basin Study Area) of each alternative future for water and related land resources planning specified in the U. S. Water Resources Council's Principles and Standards and the USDA's "Procedures" for adhering to them.

Resource Allocation Model - A computer model designed to show possible allocations and interactions of resource use on the land base. Each allocation is a pattern of resource use that satisfies specific demand constraints for market and nonmarket outputs. Costs and returns are calculated for each allocation and these direct model operations toward the goal of selecting the most optimal resource allocation and management pattern to meet the demand constraints inherent in the alternative being analyzed.

Social Well-Being Account - One of the four required accounts for categorizing, displaying, or accounting the beneficial and adverse effects of each alternative future for water and related land resources planning specified in the Water Resources Council's Principles and Standards and the USDA's "Procedures" for adhering to them.

The account includes (1) real income distribution among individuals, classes and groups; (2) life, health, and safety; (3) educational, cultural, and recreational opportunities; and (4) emergency preparedness.

Status Quo - Is the existing state of affairs.

Synopsis - A condensed statement of the various alternative futures analyzed during the course of this study.

Terrestrial Animal Species - Species living on or in the land.

Unconstrained Production - Production in the Basin is not limited to the baseline future projections for food, fiber, goods, and services.

Watershed - The total area above a given point on a stream that contributes water to the flow at that point.

Watershed Groups - The Basin has 134 individual watersheds that have been delineated. A watershed group is one or more individual watersheds that were grouped for planning purposes. The watersheds that were grouped together are contiguous and have similar agricultural related characteristics.

Watershed Investigation Report - A report developed to determine feasibility of possible project action that could be taken to solve identified problems and concerns within individual watersheds or groups of watersheds. The reports are agricultural related and key on existing USDA programs.

Wilderness Experience - A recreational activity that takes place in a wilderness setting. A wilderness setting consists of a large natural ecosystem(s), which show no obvious evidence of present or previous human uses other than foot or pack animal trails. These areas are classified by Congress under the 1964 Wilderness Act and prohibit motorized equipment use.

Working Paper - A document that details and supports material used in the main report. Seven working papers and two procedural guides were developed during the course of the Platte River Cooperative River Basin Study.

Zero Discharge System - A set of irrigation practices, either structural, nonstructural, or both that tend to reduce return flows of irrigation water to zero.

APPENDIX A

A BRIEF SUMMARY OF THE PLATTE RIVER BASIN RESOURCES

Appendix A

A Brief Summary of the

PLATTE RIVER BASIN RESOURCES

* * *

FIGURES

MAPS

TABLES

Appendix A

A Brief Summary of the PLATTE RIVER BASIN RESOURCES

PURPOSE OF SUMMARY

This appendix is designed to provide a rapid assessment of the Basin's resources and people. It is not detailed. Information primarily includes generalized maps and summary tables with as little narrative as possible.

There is a great deal of detail available in various references, such as the Platte River Basin working papers as listed in the introduction of the main report, and the Wyoming Water Planning Program Report No. 9 entitled, "Water and Related Land Resources of the Platte River, Wyoming," dated September 1971. As the need develops, the reader can pursue an answer to a question by checking these references or using the computer assisted tools available through the USDA Fort Collins Computer Center.

LOCATION

The Platte River Basin in Wyoming includes the drainage areas of the North Platte, South Platte and Niobrara Rivers. The Basin area is approximately 24,664 square miles and extends 150 miles northward from the Wyoming-Colorado State line and 260 miles westward from the Wyoming-Nebraska State line. Of the total area, 22,074 square miles are in the North Platte drainage, 2,053 in the South Platte drainage, and 537 square miles in the Niobrara River Drainage. A map of the Basin is following page A-6. All of Laramie, Goshen, Platte, and Albany counties, most of Carbon county, substantial parts of Natrona, Fremont, Converse, and Niobrara counties and small parts of Sweetwater and Sublette counties are in the study area. Mainstem reservoirs include Guernsey, Glendo, Alcova, Pathfinder, and Seminoe.

ANNUAL AVERAGE PRECIPITATION

The climate is semi-arid with mean annual precipitation ranging from about ten inches in the west-central portion of the Basin to over 60 inches in the mountain ranges. A map of the precipitation zones is following page A-6.

Summertime precipitation usually occurs as thundershowers with light snow in the fall and winter. Springtime frequently brings wet snows and rain.

Growing seasons in cultivated areas are shortest on the plains southwest of the Laramie Range and longest along the North Platte River where it leaves Wyoming near Torrington. For alfalfa and grass

the growing season varies from 153 days near South Pass City to 227 days at Wheatland. The average length of the 32 degree F. freeze-free period in cultivated areas varies from a low at South Pass City of no dependable freeze-free period to 133 days at Wheatland.

GEOLOGY

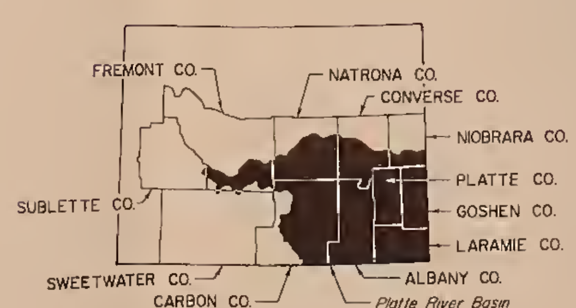
The Platte Basin has a complex geologic history related to the geologic development of the Rocky Mountain region. Patterns of deposition, uplift, and erosion have influenced the physiography and location of resources.

The eastern part of the Basin features gently rolling plains and uplands sloping down towards the east. High mountain ranges and intermontane valleys of the Rocky Mountains dominate the western part, with the Continental Divide forming the Basin's western boundary. Elevations range from 4,100 feet at Torrington to 12,490 feet in the Wind River Mountains. Elevations of the high plains vary from about 4,000 to more than 6,000 feet.

The Basin evolved geologically through many milleniums of sediment accumulation, structural deformation, and erosion. Major events in the Basin have been interpreted from geologic record and generalized on the Geology map found following page A-6.

The Precambrian age was characterized by long periods of igneous activity, sedimentation, metamorphism, folding, and subsequent erosion throughout the entire Rocky Mountain region. Rocks that are now exposed in the cores of mountain ranges resulted from this activity. During the Paleozoic age, the Basin was characterized by submergence and deposition alternating with emergence and erosion. Hundreds of feet of limestone were left exposed by erosion in the southeastern part of the Basin. Sedimentary depositions during the Mesozoic age vary significantly both vertically and laterally and include marine and freshwater depositions. The Cretaceous age shows marine deposition, then gradual emergence followed by folding, faulting, and mountain building. Tertiary age activity included the deposition of stream and lake sediments east of the Laramie Range. Finally, during the Quaternary age, there was periodic uplift and erosion with stream and wind deposition.

Many of the drainage systems in the Platte River Basin are superposed onto the landscape. During Tertiary time, thick sequences of sediments were deposited completely burying much of the preexisting mountainous landscape. In late Pliocene time the North Platte River probably was flowing across these deposits in essentially its present location, only topographically higher. As a result of uplift in the mountains and a wetter climate, the rivers degraded during Pleistocene time. As the cover mass of Tertiary sediments was excuvated, the preexisting landscape was exposed and many streams became entrenched in these underlying rocks.



LOCATION MAP

PLATTE RIVER BASIN

WYOMING

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

DECEMBER 1979

10 0 10 20 30 40 MILES

SCALE 1:1,500,000

ALBERS EQUAL AREA PROJECTION

M7-SN-23067

Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.

U S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS PORTLAND, OR 1979

AVERAGE ANNUAL PRECIPITATION

BASED ON PERIOD 1941-70

PLATTE RIVER BASIN

SUBLETTE, FREMONT, NATRONA, CONVERSE, NIOBRARA, CARBON, ALBANY, PLATTE, GOSHEN AND LARAMIE COUNTIES

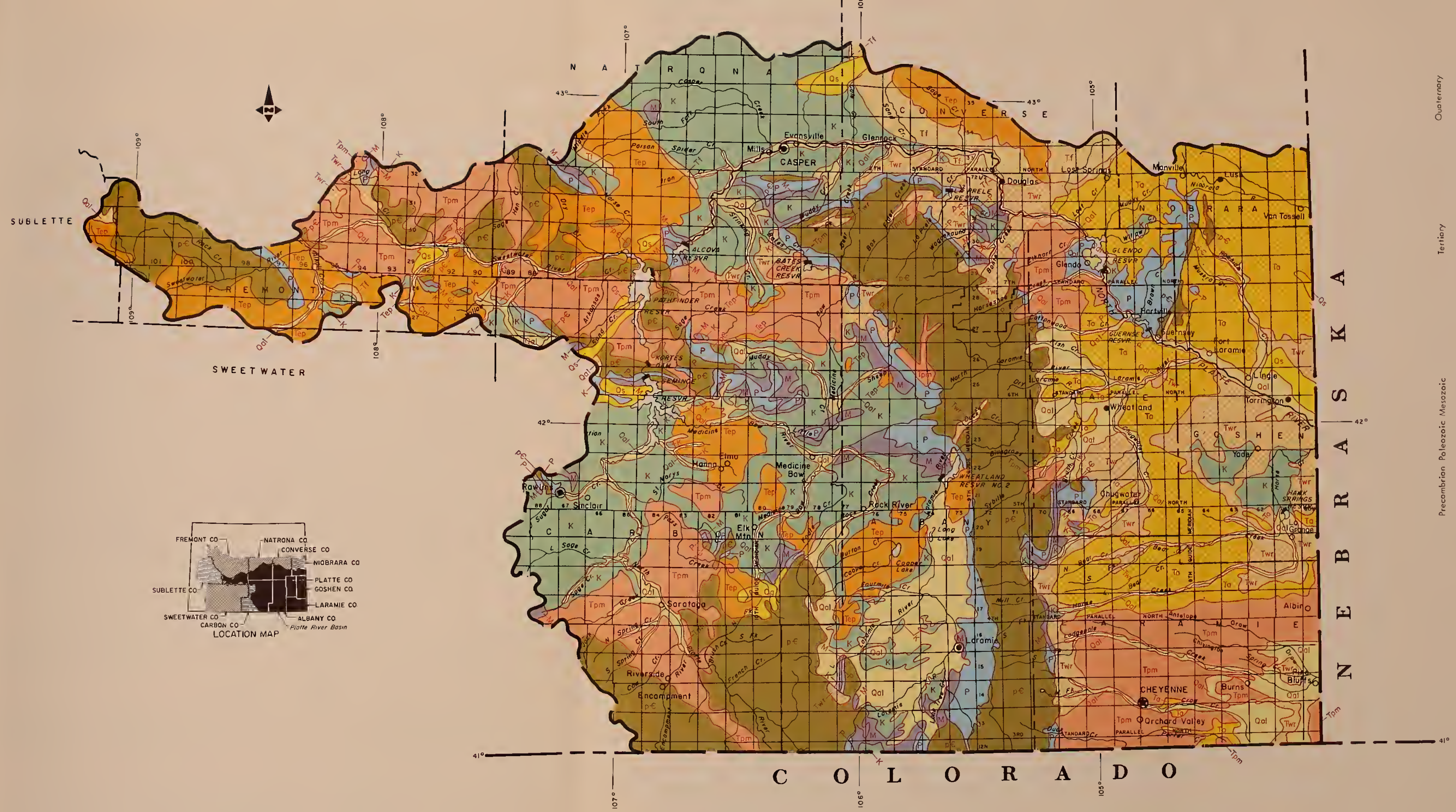
WYOMING

DECEMBER 1979

M7-EN-23594

Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE



GEOLOGY

YOUNGER, FLAT LYING ROCKS

Quaternary

- Qal — Alluvial deposits consisting of unconsolidated silt, sand, and gravel
- Qs-Ql Qg — Wind-blown sand, glacial deposits, and late lake deposits consisting of unconsolidated sand, silt, and clay

Tertiary

- Tpm — Ogallala formation east of the Laramie Range and North Park, Browns Park formations west of the Laramie Range - buff to olive drab soft shales and siltstones with interbedded oil shale, tuffaceous sandstone, lenticular marlstone and conglomerate
- Ta — Arikaree formation - buff to tan, fine grained sandstone with some interbedded siltstone and limestone
- Twr — White River Group includes the Brule, White River, and Chadron formations east of the Laramie Range - pale pink, soft siltstone; grey, tuffaceous siltstone; interbedded conglomerate; reddish claystone; and sandstone
- Tep — Wind River, Wasatch, and Hanna formations - variegated claystone, sandstone, shale, lenticular conglomerate and coal beds
- Tf — Fort Union formation - brown to grey sandstone and shale, carbonaceous shales, coal and pebble conglomerate

OLDER, FOLDED AND FAULTED ROCKS

Precambrian Paleozoic Mesozoic

- Cretaceous: K — Cretaceous Rocks - predominately soft shales with interbedded hard sandstones, conglomerates, and coal
- Older Mesozoic: M — Mesozoic Rocks - predominately hard sandstones with interbedded soft shales, siltstones, and limestones
- P — Paleozoic Rocks - Predominately limestones and dolomites with interbedded sandstones and shales
- Precambrian Rocks - igneous and metamorphic rocks consisting predominately of granite
- ---- Approximate Fault Trace

GEOLOGY
PLATTE RIVER BASIN
WYOMING
DECEMBER 1979

10 0 10 20 30 40 MILES

SCALE 1:1,200,000

Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.
Thematic detail compiled by state staff.

US DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA SCS PORTLAND OR 1979

M7-EN-23067A-1

There are many spectacular examples of superposed drainage in the Basin, including the Sweetwater River at Devils Gate, and the Laramie River through the 1,000-foot deep gorge in the Laramie Mountains.

SOILS

The major soils in the Platte River Basin are briefly described below. More detailed information is available in the "Wyoming General Soil Map", Research Journal 117, University of Wyoming, September 1977; published soil survey reports; and unpublished soil survey handbooks and field sheets located in Soil Conservation Service field offices in the Basin. A general soils map of the Basin is found following page A-8.

Soils of the Mountains and Mountain Valleys

These are well-drained, steep to very steep, cold soils that are generally shallow to moderately deep to igneous, metamorphic and sedimentary rock. Included are numerous areas of rock outcrop. Small areas of deep and very deep soils occur along the small streams. These soils are used for recreation and woodland.

Soils of the Intermountain Basins and Foothills

Intermountain basin soils are cool, nearly level to gently sloping, deep and very deep, and are on flood plains, terraces, and alluvial fans. They are generally well-drained, but include poorly drained soils that may be calcareous and/or alkaline. Irrigated hayland is the major use.

The intermountain foothill soils are cool, rolling to steeply sloping, and shallow to deep over sedimentary rock. Some rock outcrop occurs on the steeper slopes and badlands are common. The soils are calcareous and may contain some alkali. Livestock grazing is the major use.

Soils of the Eastern Wyoming Plains

Very deep, well-drained, warm, transported soils are either on rolling or hummocky wind-laid dunes or on nearly level to gently sloping flood plains and low terraces. The soils are calcareous and may contain some alkali. Livestock grazing and irrigated cropland are the major uses.

Shallow to deep, well-drained, warm soils are on intermingled steep hills that are underlain by sedimentary rock. The soils are calcareous. Small areas of rock outcrop are common. Livestock grazing is the major use.

Moderately deep to very deep, well-drained, warm soils are on nearly level to rolling high terraces and alluvial fans. The soils are calcareous and may contain some alkali. Livestock grazing and irrigated and dryland cropland are the major uses.

ASPECT OF LAND USE AND VEGETATIVE COVER

Platte Basin land use and types of vegetation is quite diverse as shown on the Generalized Aspect Map found following page A-8. Land uses range from intensively farmed areas in the valleys up to wilderness areas. Vegetation types include cropland, grassland, riparian and water influence lands, sagebrush, mountain shrubs, greasewood and salt brush, and pine and spruce forests. Depending on soils, climate, and elevation the following plant species characterize the various vegetative types.

Grasslands

The principal grass and grasslike species are blue grama, western wheatgrass, needle grasses, Indian ricegrass, little bluestem, prairie sandreed, threadleaf sedge, bluebunch wheatgrass, sandberg bluegrass, prairie junegrass, and Idaho fescue. Various forbs and shrubs are also present in varying amounts. Grasslands cover 5,092,200 acres or 32 percent of the Basin.

Riparian lands

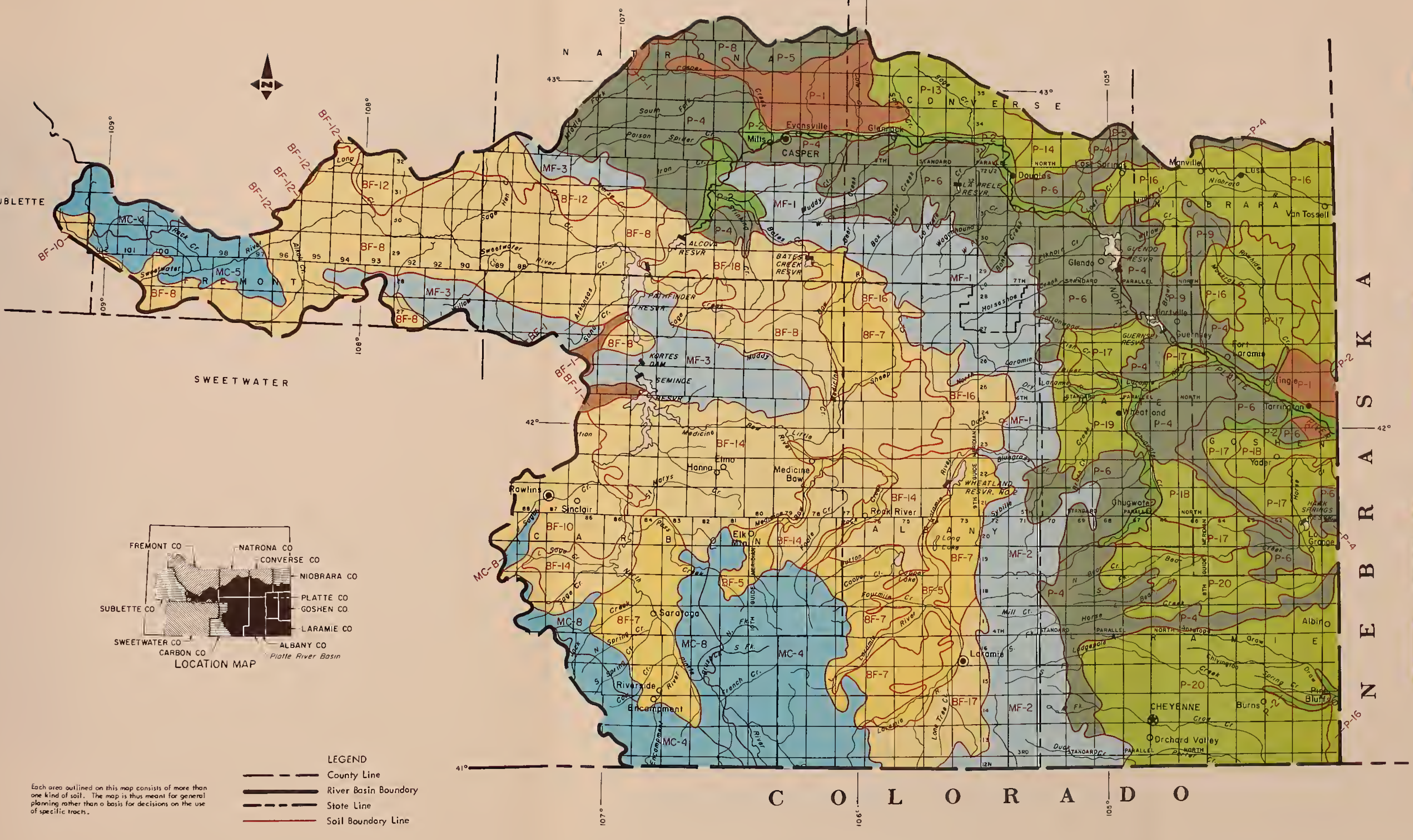
The major grass and grasslike species are alkali sacaton, wildrye grass, baltic rush, Nebraska sedge, tufted hairgrass, reedgrasses, and tall managrasses. Forbs are usually present in varying amounts. The principal shrub and tree species include greasewood, rubber rabbitbrush, shrubby cinquefoil, willow, roses, cottonwood, boxelder, and buffaloberry. Riparian lands cover 453,600 acres, or 3 percent of the Basin.

Sagebrush

This type contains many species of sagebrush occurring in various combinations and densities with other plants. Big sagebrush is the most common shrub species in the western portion while silver sagebrush, sand sagebrush, and fringed sagewort are more abundant in the eastern part of the Basin. Common grasses and forbs include needleandthread, bluebunch wheatgrass, Indian ricegrass, buckwheat, milkvetch, fleabane, phlox, Indian paintbrush, aster, larkspur, scarlet globemallow, western wheatgrass, blue grama, little bluestem, and yarrow. Sagebrush lands cover 7,047,800 acres, or 45 percent of the Basin.

Mountain Shrub

This type is the transition between the pine-fir forests and the sagebrush areas. Principal species include Serviceberry, true mountain mahogony, Antelope bitterbrush, big sagebrush, current, willow, big bluegrass, bluebunch wheatgrass, Columbia needlegrass, mountain bromegrass, spike fescue, Idaho fescue, Sandberg bluegrass, violets, penstemons, clover, phlox, paintbrush, buckwheat, fleabane, and balsam root. Mountain shrub land covers 629,500 acres or 4 percent of the Basin.



SOIL ASSOCIATIONS

M – Soils of the Mountains and Mountain Valleys

MC – Dark and light colored soils of the high mountains that are usually moist, have an AAP (1) of 45-100 cm. (18-40 In.), and a MSST (2) of less than 15°C. (59°F.).

Soils formed from residual materials:
- MC-4 Rock Outcrop-Cryoboralfs-Cryoborolls association
- MC-5 Cryoborolls-Rock Outcrop association
- MC-8 Cryoborolls-Cryorthents association

MF – Dominantly dark colored soils of the mountains and mountain valleys that are usually moist in some parts during the summer, have an AAP of 35-60 cm. (14-24 In.), a MAST (3) of less than 8°C. (47°F.), and a MSST of more than 15°C. (59°F.).

Soils formed from residual materials:
- MF-1 Eutroboralfs-Haploborolls association
- MF-2 Argiborolls-Haploborolls association
- MF-3 Haploborolls-Argiborolls-Rock Outcrop association

B – Soils of the Intermountain Basins and Foothills

BF – Dominantly light colored soils of basins, terraces, and fans which are usually dry or may be moist in some parts during the summer, have an AAP of 20-35 cm. (8-14 In.), a MAST of less than 8°C. (47°F.), and a MSST of more than 15°C. (59°F.).

Soils formed from transported materials:
- BF-1 Torripsamments association
- BF-5 Torrifluvents-Fluvaquents-Haloquepts association
- BF-7 Calciorthids-Haplargids association

Soils formed from residual materials:
- BF-8 Torriorthents-Haplargids-Rock Outcrop association
- BF-10 Torriorthents-Haplargids-Natrargids association
- BF-12 Haplargids-Torriorthents association
- BF-14 Torriorthents, shallow-Torriorthents association
- BF-16 Haploborolls-Rock Outcrop association
- BF-17 Torriorthents-Camborthids association
- BF-18 Torriorthents, shallow-Rock Outcrop association

P – Soils of the Eastern Wyoming Plains

Dark and light colored soils on upland plains, terraces, and fans which are usually moist in some parts during the summer, have an AAP of 30-40 cm. (12-16 In.), a MAST of 8° - 15°C. (47° - 59°F.), and a MSST of more than 15°C. (59°F.).

Soils formed from transported materials:
- P-1 Torripsamments association
- P-2 Torrifluvents-Haplargids association

Soils formed from residual materials on steep uplands:
- P-4 Torriorthents, shallow association
- P-5 Torriorthents-Haplargids association
- P-6 Torriorthents-Torriorthents, shallow association
- P-8 Torriorthents association
- P-9 Argiustolls, shallow association

Soils on nearly level to rolling upland plains, terraces, and fans:
- P-13 Haplargids-Paleargids-Torriorthents association
- P-14 Haplargids-Torriorthents association
- P-16 Argiustolls-Haplustolls association
- P-17 Haplustolls-Argiustolls-Torripsamments association
- P-18 Haplustolls-Argiustolls-Torriorthents association
- P-19 Haplargids association
- P-20 Argiustolls-Haplustolls-Torriorthents association

(1) AAP = Average Annual Precipitation
(2) MSST = Mean Summer Soil Temperature
(3) MAST = Mean Annual Soil Temperature

GENERAL SOIL MAP
PLATTE RIVER BASIN
WYOMING

DECEMBER 1979

10 0 10 20 MILES
SCALE 1:1,200,000

Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.
Thematic detail compiled by state staff.

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Forest Land--Tree Covered

These types consist of several deciduous and nondeciduous trees. The major areas where precipitation is adequate to support forests are Pole Mountain, Snowy Range, Sierra Madre Range, Laramie Mountains, Green Mountains, Shirley Mountains, and the Wind River Range. Principal tree species include engleman spruce, lodgepole pine, subalpine fir, white fir, cottonwood, aspen, limber pine, ponderosa pine, Utah juniper, birch, and scrub oak. These tree covered forest lands cover 848,110 acres, or 5 percent of the Basin.

Halophytic Shrub

This plant community is characterized by greasewood and saltbush. Major grass and grasslike species are Bottlebrush squirreltail, western wheatgrass, inland saltgrass, and sandberg bluegrass. Halophytic shrub lands cover 372,000 acres or 2 percent of the Basin.

Cropland

Of the 15,785,040 acres of land area in the Basin, about 9 percent is devoted to cropland, and hay and pastureland. The cropland is divided almost equally between irrigated land and dry cropland. Dry cropland accounts for 669,640 acres and consists principally of winter wheat, barley, oats, dryland alfalfa, other hay and dry pasture. Slightly over 215,000 acres of the dry cropland is fallowed every year.

The irrigated acreage is approximately 672,190 acres. Hay is the principal irrigated crop grown, accounting for 357,520 acres. Alfalfa makes up 98,750 acres of the hayland acreage with the remainder consisting of legume-grass hay either native or introduced species. Irrigated pasture amounts to 119,200 acres. Corn for grain and corn for silage, both irrigated and dryland, total 47,130 acres. A breakdown of all crops by county is shown on Table A-7 on page A-18.

EROSION

Average annual erosion rates have been estimated for areas within the Basin that reflect the interaction of climate, vegetation, geology, soils, and existing land use. These erosion rates are shown on the Erosion map following page A-10. They have been made for relatively large areas and are to be used for general planning only. Detailed estimates will need to be made for any specific site situation.

LAND STATUS

Table A-1 entitled, "Land Ownership or Administration in the Platte River Basin," shows that out of 15,785,040 acres, the federal-state-local governments administer 38 percent, with the remaining 62 percent in private ownership. The Bureau of Land Management is the largest of the federal landholders and administratively controls 3.4 million acres,

Table A-1 LAND OWNERSHIP OR ADMINISTRATION IN THE PLATTE RIVER BASIN - 1972

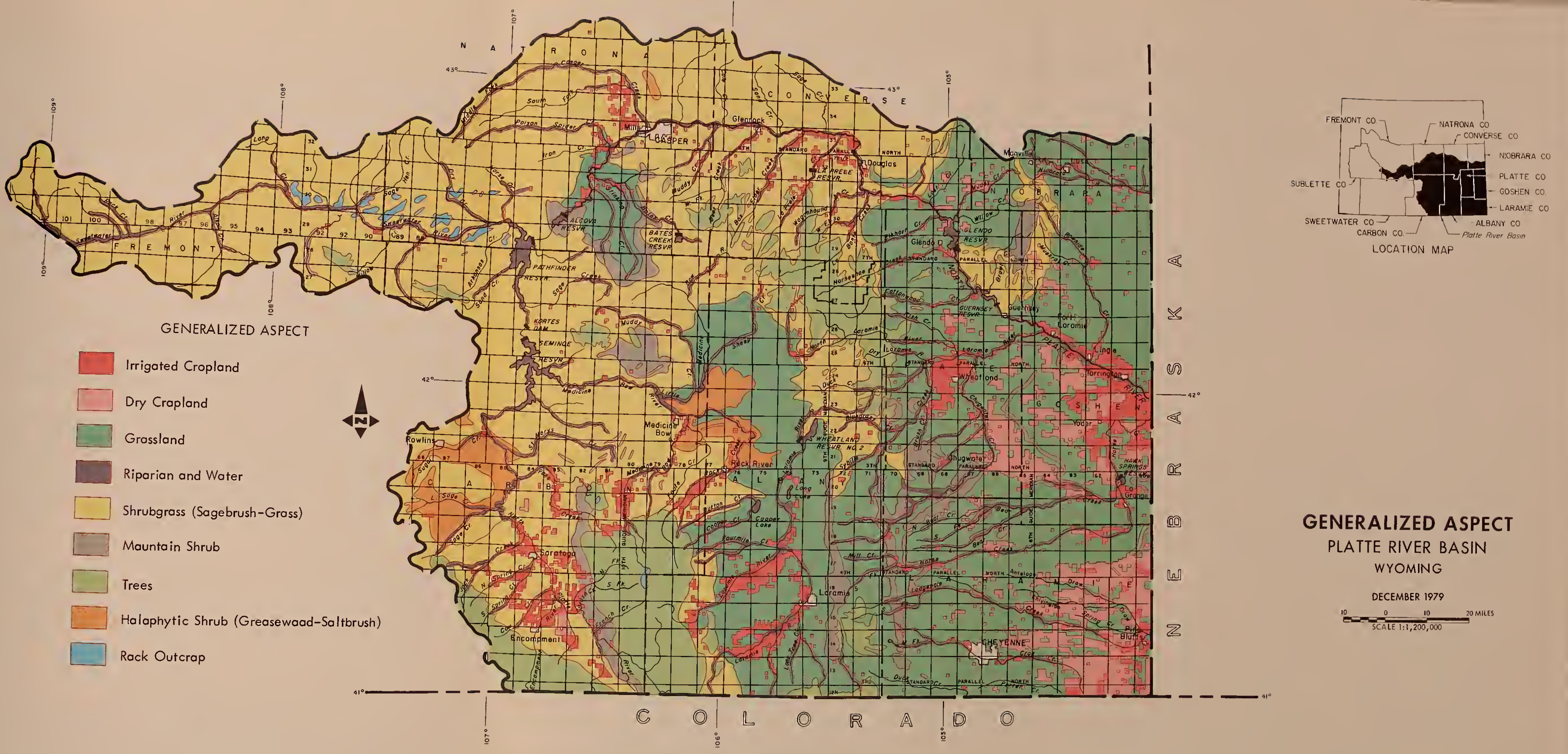
Platte River Basin, Wyoming

	Total Area (Acres)1/	Water Surface (Acres)2/	Land (Acres)	Federal Administration (Acres)3/	State & Local Ownership (Acres)3/	Private Ownership (Acres)	Federal Administration (Percent)	State & Local Ownership (Percent)	Private Ownership (Percent)
Albany	2,761,600	42,752	2,718,848	680,869	228,000	1,852,731	24.65	8.26	67.09
Carbon	3,613,470	54,912	3,558,558	1,820,025	226,176	1,567,269	50.37	6.26	43.37
Converse	1,351,850	896	1,350,954	138,080	170,000	1,043,770	10.21	12.58	77.21
Fremont	1,122,760	600	1,122,160	919,723	84,785	118,252	81.92	7.55	10.53
Goshen	1,427,200	4,416	1,422,784	27,253	102,830	1,297,117	1.91	7.20	90.89
Laramie	1,731,200	1,088	1,730,112	17,813	195,050	1,518,337	1.03	11.27	87.70
Natrona	1,955,310	17,088	1,938,222	768,489	226,310	960,511	39.30	11.58	49.12
Niobrara	412,810	-	412,810	1,280	57,400	354,130	0.31	13.90	85.79
Platte	1,357,440	22,528	1,334,912	115,950	141,990	1,099,500	8.54	10.46	81.00
Sublette	33,700	-	33,700	30,842	2,407	451	91.52	7.14	1.34
Sweetwater	17,700	-	17,700	17,700	0	0	100.00	0	0
TOTAL	15,785,040	144,280	15,640,760	4,538,024	1,434,948	9,812,068	28.75	9.09	62.16

1/ Small Watershed Areas of Wyoming, USDA, Soil Conservation Service, Rev. February 1974.

2/ Areas of Wyoming; 1960, Area Measurement Reports, U.S. Department of Commerce, Bureau of the Census, GE-20 No. 52, August 1964.

3/ Wyoming Data Book 1972, Division of Business and Economic Research, College of Commerce and Industry, University of Wyoming, December 1972, and unpublished Basin inventory data.



Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.
Thematic detail compiled by state staff.

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followed by the Forest Service with 1 million acres. The Land Status Map following page A-12 shows the location of the various ownerships.

Private ownership ranks highest in the eastern counties of Laramie, Goshen, Platte, Converse, and Niobrara. These counties constitute one of the few areas in the state where substantial dry and irrigated cropland exist.

THE BASIN'S PEOPLE AND RESOURCES

Population

Table A-2 Past, Present and Projected Population
Platte River Basin, Wyoming

Basin Population, Thousands

	1940	1950	1960	1970	1975	1980	1985	2000	2010	2020
WWPP	112	140	171	174	187	207	224	282	316	313
OBERS E	112	140	171	174	187	170	171	171	173	175

Employment

Table A-3 Present and Projected Employment
Platte River Basin, Wyoming

Thousands

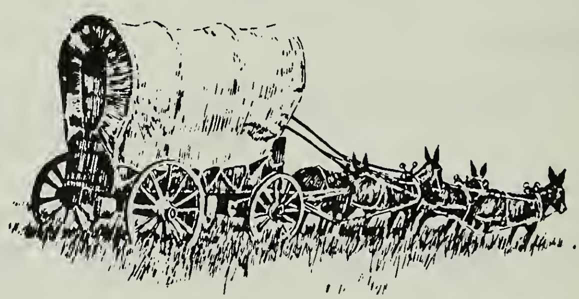
	1970	1975	1980	1985	2000	2010	2020
Labor Force	69.7	77.1	86.2	91.3	113.4	126.5	115.8
Employed (WWPP)	67.0	74.7	83.0	88.8	108.6	120.4	111.2
Employed (OBERS E)	67.0	74.7	73.6	73.3	76.0	76.9	77.7

Transportation

The Location Map following page A-6 shows the location of U.S. and state highways in the Basin. Interstate I-25 connects Casper, Glenrock, and Douglas with Cheyenne. Interstate I-80 enters the Basin from the west passing through Rawlins, Laramie and Cheyenne and leaving the Basin near Pine Bluffs. U.S. Highway 85 runs north and south along the eastern boundary of the state and connects Lusk, Torrington, and Cheyenne. In the western portion of the Basin, state highways connect the northern and southern areas.

There are two main east-west railroad lines. The Burlington Northern follows the route of the North Platte River and connects Torrington, Douglas, and Casper. The Union Pacific enters the Basin from the east following I-80 into Cheyenne, then to Laramie and Rawlins. North-South railroad lines connect the Burlington Northern and Union Pacific at Cheyenne to Wendover and from Torrington to Egbert near the Nebraska State line.

Commercial air transportation is provided by Frontier Airlines facilities at Cheyenne, Laramie, and Casper, and by Western Airlines facilities at Casper and Cheyenne. Several small commuter airlines serve many of the smaller towns in the Basin.

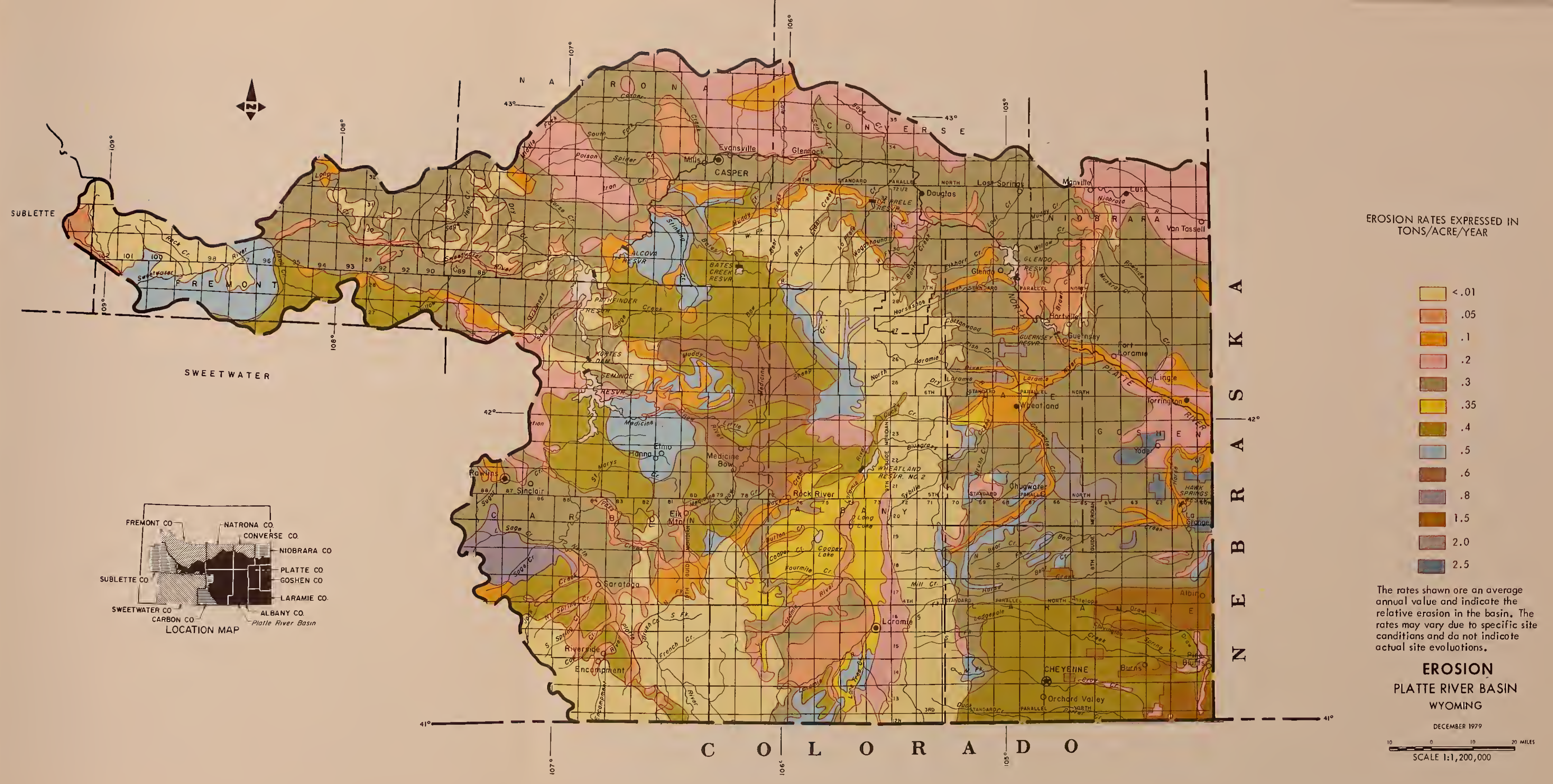


Farm and Ranch Characteristics

The total number of all farms and ranches in the eight county area approximating the Platte River Basin in 1974 was 3,006, down 12 percent from 1969. The number of farms and ranches with sales of $2,500 and over was 2,666 in 1974, down four percent from 1969. The average size of all units in 1974 was 5,158 while the average size with sales of $2,500 and over was 5,703 acres. Average size is somewhat deceiving since average size varies from a high of 12,804 acres in Natrona County to a low of 1,690 acres in Goshen County. The average size of farms and ranches for counties in the Platte Basin is shown in Figure A-1. Units larger than 2,000 acres account for almost 41 percent of the farms and ranches in the eight county area (Figure A-2). The eight county area includes Albany, Carbon, Converse, Goshen, Laramie, Natrona, Niobrara, and Platte Counties.

The largest number of units in the Basin in 1974 were operated by part owners (47 percent). Full ownership accounts for 39 percent while the remaining 14 percent are operated by tenants.

The number of average size farms and ranches with sales of $2,500 and over are listed by type of organization in Table A-4.



Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.
Thematic detail compiled by state staff.
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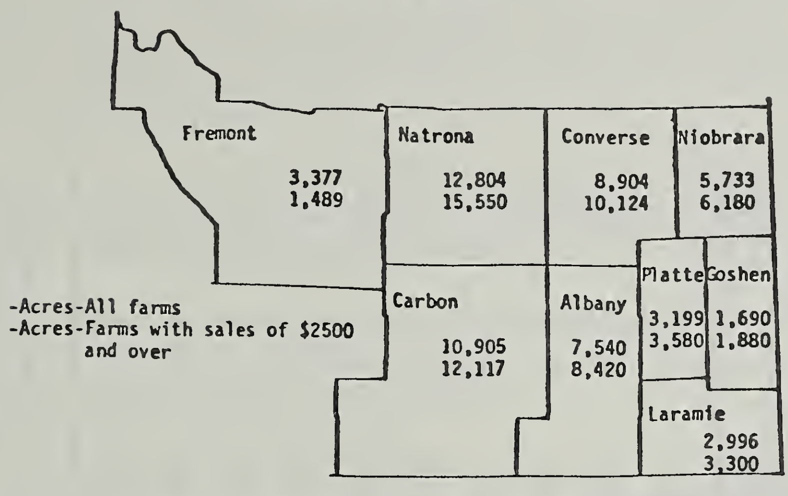
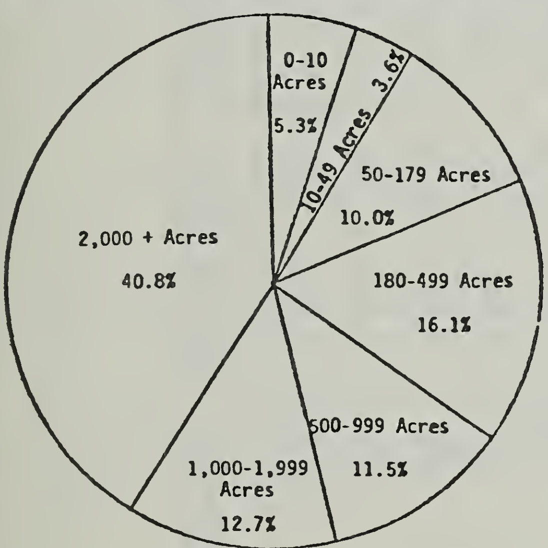
Figure A-1 Average Farm Size, Platte River Basin-Wyoming, Acres, 1974



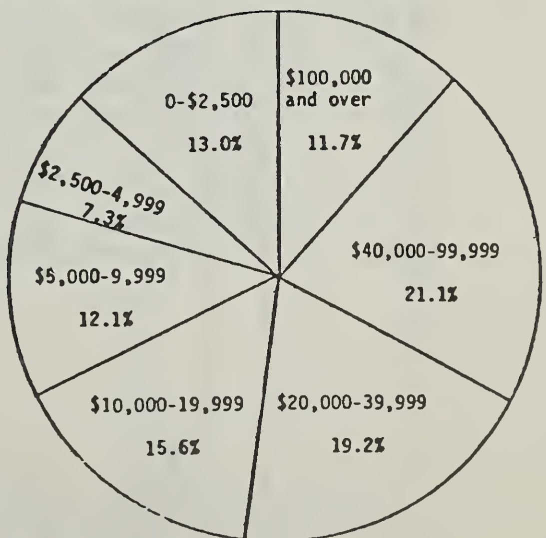
Source: U.S. Department of Commerce, Bureau of Census, U.S. Census of Agriculture, Wyoming, 1974.

Figure A-2 Farm Size Distribution, All Farms, Platte River Basin-Wyoming, Eight County Area, 1974



Source: U.S. Department of Commerce, Bureau of Census, U.S. Census of Agriculture, Wyoming, 1974

Figure A-3 Value of Sales Distribution, All Farms, Platte River Basin-Wyoming, Eight County Area, 1974



Source: U.S. Department of Commerce, Bureau of Census, U.S. Census of Agriculture, 1974.

Table A-4 Farms and Ranches by Type of Organization, Farms and Ranches With Sales of $2,500 and Over, Year 1974

Platte River Basin, Wyoming

County	Individual or Family		Partnership		Corporation		Other	
	No.	Average Size-Acres	No.	Average Size-Acres	No.	Average Size-Acres	No.	Average Size-Acres
Albany	136	5,812	19	9,493	28	20,357	---	---
Carbon	132	5,970	27	(D)	56	26,640	1	(D)
Converse	190	7,140	17	(D)	28	33,850	2	(D)
Fremont	498	1,062	30	1,493	51	5,657	---	---
Goshen	614	1,400	61	2,153	40	7,594	1	1
Laramie	408	2,016	35	(D)	41	14,694	1	(D)
Natrona	131	9,660	11	10,491	35	39,183	---	---
Niobrara	222	5,497	22	(D)	11	17,245	1	(D)
Platte	339	2,686	34	6,431	23	12,542	---	---
Total--excludes Fremont	2,172	3,689	226	(D)	262	23,106	6	(D)

Source: U.S. Department of Commerce, Bureau of Census, U.S. Census of Agriculture, Wyoming, 1974. Note--(D) - Data withheld to avoid disclosing information for individual farms.

The largest number (81 percent) are owned by individuals or families. Partnerships own 8 percent, corporations own 10 percent and other organizations own less than one percent. However, the average size for corporations is 23,106 acres compared to 3,689 acres for individuals and families.

The value of sales distribution is shown in Figure A-3 on page A-13. Nearly 12 percent have sales of $100,000 and over while 32 percent have sales of $10,000 and under.

The breakdown of market value of agricultural products sold in the year 1974 is listed in Table A-5. For the eight county area, the largest category is cattle and calves (55 percent). The next largest category is grains (19 percent). These are not totally representative of the Basin; however, since much of the hay and feed grains is fed to the livestock and therefore is not reported as being sold.

The income from farm or ranch related sources before taxes and expenses and the total family income from off-unit sources is also listed in Table A-5. For the eight county area, the farm and ranch related income in 1974 was 4 percent and the off-unit income 10 percent of the market value of agricultural products sold.

Land in farms and ranches according to use is listed in Table A-6 for agriculture census years between 1949 and 1974. The acreage of land in farms and ranches and total cropland has remained fairly constant, but did drop over 7 percent from 1964 to 1974. The harvested cropland acreage has been nearly constant since 1959. The total woodland acreage dropped almost 68 percent from 1949 to 1954, but has not changed much since then. Acreages for several other uses are shown in Table A-6, but changes in reporting categories prevent the making of definite comparisons. Table A-7 shows the acres of cropland by counties used in the analysis of the various alternative futures.

WATER RESOURCES

Water Yields and Depletions

Because of the variation in precipitation, much of the crop production in the Basin must rely on irrigation. About 72 percent of the historic consumptive use of water in the Basin is for irrigation, which is approximately 651,000 acre-feet annually.

Evaporation loss is estimated to be 192,300 acre-feet annually, with the six major main stem reservoirs (Seminoe, Kortes, Pathfinder,

Table A-5 Market Value of Agricultural Products Sold, Farm and Ranch Related Income, and Off-Unit Income; Farms and Ranches with Sales of $2,500 and Over, Year 1974 Platte River Basin, Wyoming

County	Grains	Field Seeds, Hay, Forage & Silage	Other Field Crops	Vegetables & Fruits	Poultry & Dairy	Cattle & Calves	Hogs & Pigs	Sheep, Lambs & Wool	Other Live-stock	Farm Related Income	Off-Farm Income	Nursery & Greenhouse Products	Forest Products
	($1,000)												
Albany	(D)	(D)	---	---	1(Z)	8,147	6	172	21	355	1,167	---	1
Carbon	401	1,036	---	---	2	14,063	13	2,803	34	642	959	---	1
Converse	329	636	---	---	231	5,934	70	2,668	19	376	1,611	1	(Z)
Fremont	2,957	2,825	82	2	1,683	9,527	97	1,544	549	705	2,748	(D)	---
Goshen	11,290	2,464	12,878	2	604	20,335	288	450	18	1,516	2,015	3	---
Laramie	9,618	991	2,067	1	566	8,529	316	436	40	814	2,580	1	(Z)
Natrona	91	476	7	---	3	4,992	10	4,027	41	229	951	12	---
Niobrara	1,174	438	---	---	5(Z)	8,321	57	934	42	217	967	---	---
Platte	5,365	975	2,152	4	141	11,491	221	593	79	1,077	2,026	---	---
Total excludes Fremont	28,268	7,016	17,104	7	1,553	81,812	981	12,083	843	5,931	15,024	17	2

Source: U.S. Department of Commerce, Bureau of Census, U.S. Census of Agriculture, Wyoming, 1974. Note--(D) - Data withheld to avoid disclosing information for individual farms. (Z) - Less than half of the unit reported.

Table A-6 Land in Farms and Ranches According to Use,
All Farms and Ranches - Years 1949-1974
Platte River Basin, Wyoming

	1949	1954	1959	1964	1969	1974
	Thousand Acres					
Land in Farms	16,539	16,358	16,528	16,881	16,151	15,603
Total Cropland	1,337	1,229	1,291	1,327	1,333	1,225
Harvested Cropland	886	627	754	741	759	748
Cropland Used Only for Pasture & Grazing	197	194	215	234	195	202
Total Woodland	333	107	98	120	120	97
Pastureland & Rangeland	14,689	14,847	14,944	15,246	14,029*	13,768**
Irrigated Cropland Harvested	355	285	373	402	422*	400**
Irrigated Cropland Used Only for Pasture	138	118	162	181	63*	62**

*Class I-IV Farms. All Farms data is not reported for this item in year 1969.
**Farms with sales $2,500 and over. All Farms data is not reported for this item in year 1974.

Source: U.S. Department of Commerce, Bureau of Census, U.S. Census of Agriculture, Wyoming, years as indicated.

Table A-7 ACRES OF CROPLAND BY COUNTY
Platte River Basin, Wyoming

CROP	DRY (D) IRRIG (I)	ALBANY	CARBON	CONVERSE	FREMONT	GOSHEN	LARAMIE	NATRONA	NIOBRARA	PLATTE	SUBLETTE	SWEETWATER	TOTAL
		COUNTY AND ACRES											
Winter Wheat	I		200	90		1,430	960			270			2,950
Spring Wheat	I		210	170		180	250	50	250	130			1,240
Barley	I		160	1,860		3,440	4,200	770	350	1,000			11,780
Oats	I	140	620	1,670		2,260	700	2,120	780	800			9,090
Corn Grain	I			460		12,690	200	1,150		2,690			17,190
Corn Silage	I			1,120		11,040	1,890	1,120	200	12,310			27,680
Alfalfa	I	2,480	9,050	19,600		25,170	9,260	16,430	2,200	14,560			98,750
Other Hay	I	117,800	72,370	11,640	3,240	7,220	19,780	8,460	1,360	16,900			258,770
Sugar Beets	I			390		13,690	1,020		410	2,800			18,310
Dry Beans	I			400		10,560	1,560			2,690			15,210
Pasture	I		41,280	5,170		39,090	21,620	3,680	2,180	6,180			119,200
Potatoes	I					1,080	2,390	20					3,490
Other	I	8,760	11,460	3,930	300	11,820	5,900	3,130	710	5,580			51,590
Idle	I	7,460	7,880	2,700	230	8,130	4,060	2,150	490	3,840			36,940
SUBTOTAL		136,640	143,230	49,200	3,770	147,800	73,790	39,080	8,930	69,750	0	0	672,190
Winter Wheat	D		2,900	900		53,140	87,830		2,900	27,210			174,880
Spring Wheat	D			200		110	200		400	1,420			2,330
Barley	D			520		3,620	7,640		810	3,710			16,300
Oats	D			350		7,700	4,940		1,280	5,680			19,950
Corn Grain	D					100	130			10			240
Corn Silage	D					150	1,870						2,020
Alfalfa	D		390	260		2,280	440		2,220	900			6,490
Other Hay	D		770	1,350		16,550	19,420		3,700	4,800			46,590
Pasture	D			8,470		8,030	40,260		1,850				58,610
Fallow	D		2,900	1,960		64,820	102,600		5,390	38,030			215,700
Other	D		550	800		14,870	27,000		1,760	7,780			52,760
Idle	D		3,410	1,200		14,530	45,210		1,720	7,700			73,770
SUBTOTAL		0	10,920	16,010	0	185,900	337,540	0	22,030	97,240	0	0	669,640
BASIN TOTALS		136,640	154,150	65,210	3,770	333,700	411,330	39,080	30,960	166,990	0	0	1,341,830

Source: Basin Inventory and data developed by the Study Team.

Alcova, Glendo, and Guernsey) accounting for about 143,400 acre-feet per year. Other historic water depletions and yields are shown on the Water Yields and Depletion Map following page A-20.

General Availability of Ground Water

The general ground water availability map following page A-20 shows three delineations of ground water potential in gallons per minute. These are: (1) less than 50 gpm; (2) 50-450 gpm; and (3) more than 450 gpm. Major areas where potential water development is greater than 450 gpm are: (1) southwest of Saratoga; (2) the bottomlands near Laramie; (3) northwest of Wheatland on the Laramie River; and (4) the northeast portion of the Basin near Van Tassell.

Water Rights

Provisions of the Wyoming Constitution declare water to be State property and direct the State Engineer and Board of Control to supervise the appropriation and distribution of water. See Table A-8 entitled, "Adjudicated Water Right Acres and Permits in Good Standing" for the Platte Basin tabulation.

Court Decrees and Interstate Compacts

Laramie River Decree

The U.S. Supreme Court handed down a decree in 1922 restricting Colorado's use of water in the Laramie River. This decree was modified in 1936 and again in 1957. Under the decree the State of Colorado can divert from the Laramie River and its tributaries 49,375 acre-feet of water each calendar year. Of the 49,375 acre-feet, 19,875 acre-feet may be diverted out of the Laramie River Basin for use in the Cache la Poudre River Basin. The remaining 29,500 acre-feet of water may be diverted and used to irrigate lands within the Colorado portion of the Laramie River Basin. Not more than 1,800 acre-feet of the 29,500 acre-feet may be diverted in any calendar year after July 31 of that year. The remainder of the water and return flows are allocated to Wyoming.

North Platte River Decree

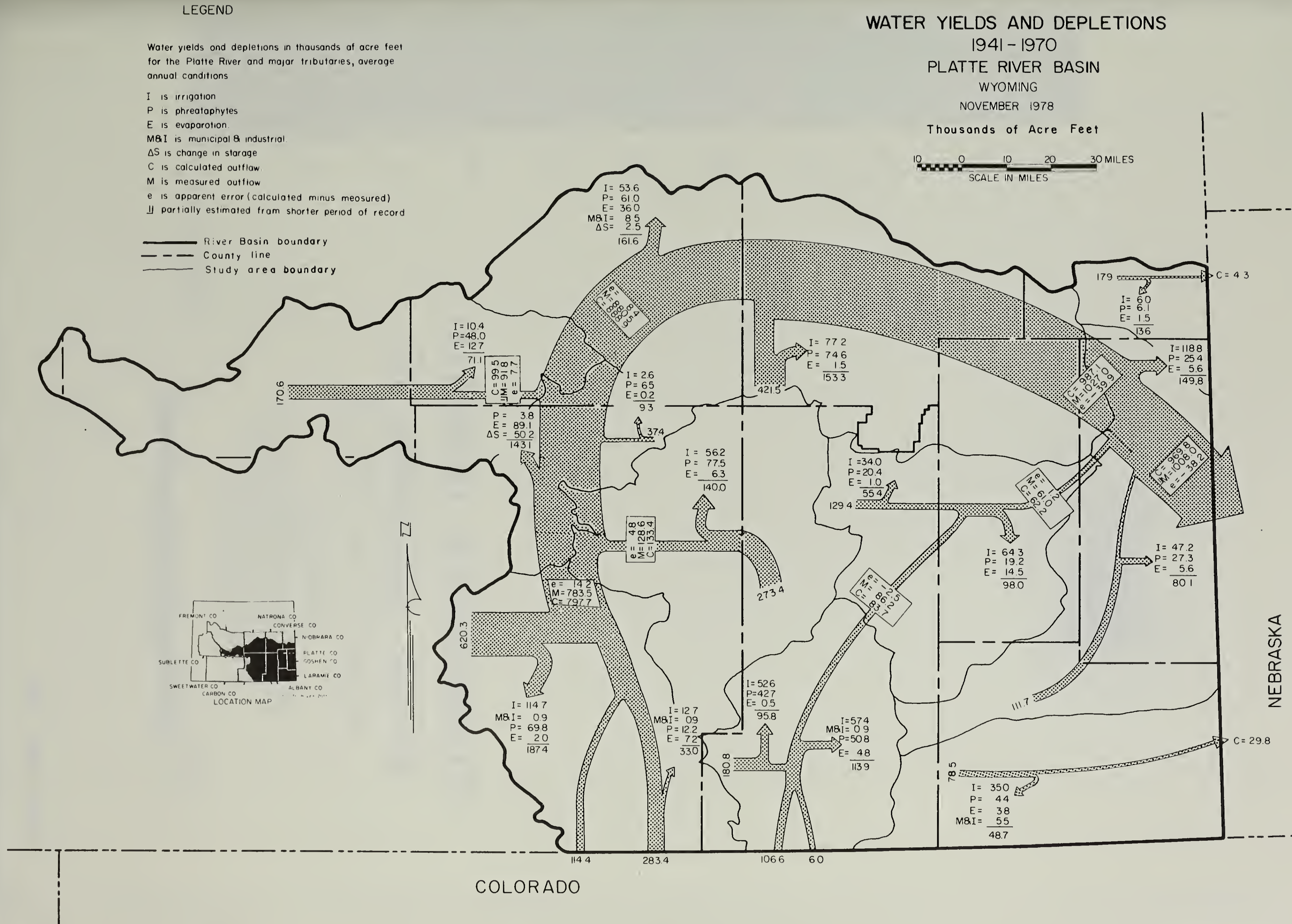
The Supreme Court proceedings that began in 1934 terminated in the North Platte River Decree of 1945. In 1953, partly because of the plans for construction of Glendo Dam, a stipulation amending the decree was agreed upon by Colorado, Wyoming, and Nebraska.

Colorado is limited to the irrigation of 145,000 acres of land and the storage of 17,000 acre-feet of irrigation water from the North Platte River and its tributaries in any water year. The transbasin diversion for irrigation may not exceed 60,000 acre-feet of water in any 10 consecutive water years.

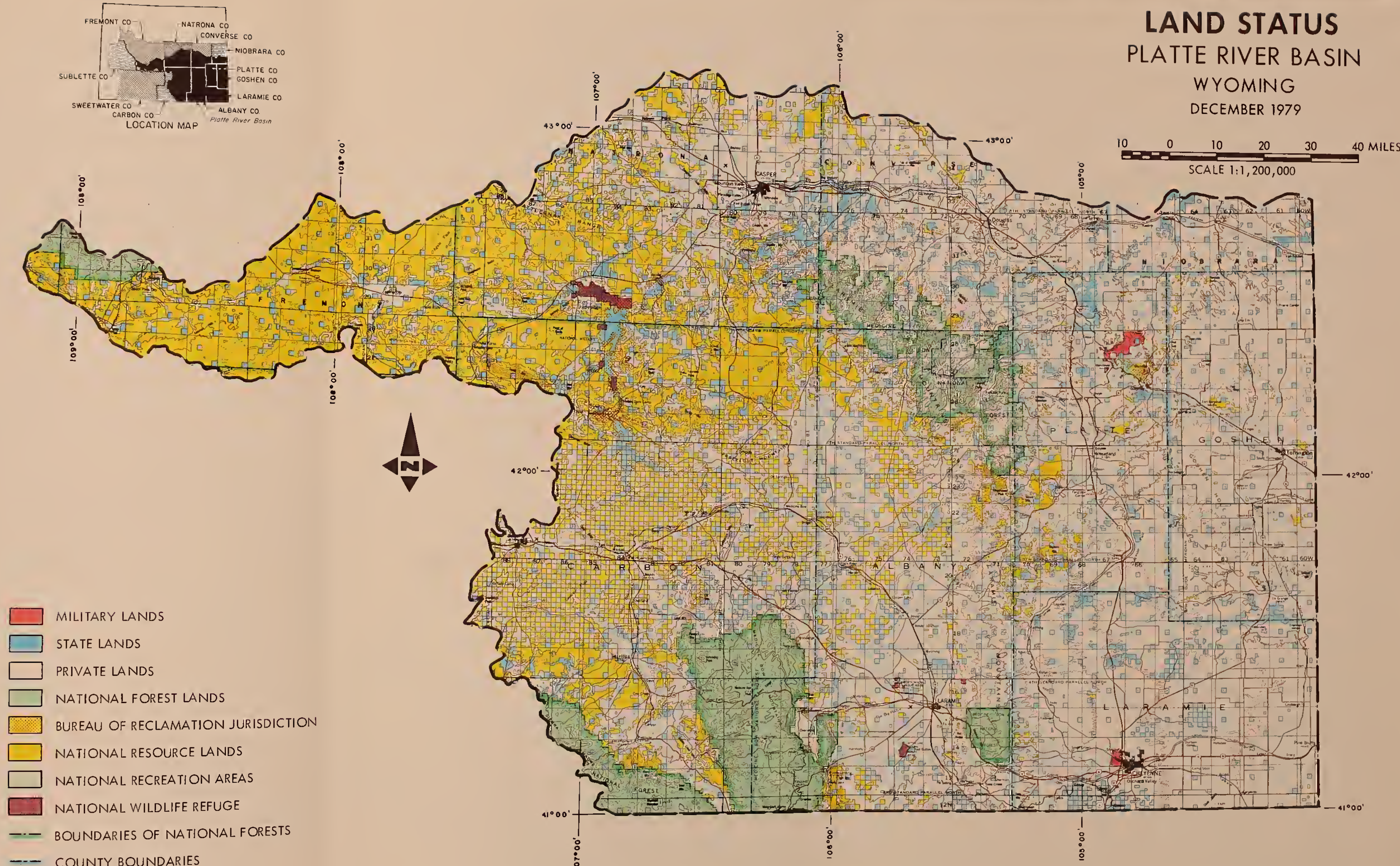
Table A-8 Adjudicated Water Right Acre and Permits in Good Standing (December 31, 1970) Platte River Basin, Wyoming

Location	Adjudicated Acres	Permits in Good Standing	Total
	- - - - -	thousand acres	- - - - -
Colorado State Line to Pathfinder Dam			
1. Main Stem North Platte River	12.9	0.8	13.7
2. Medicine Bow River Basin	95.7	5.9	101.6
3. Sweetwater River Basin	14.3	2.6	16.9
4. Other Tributaries	148.7	10.7	159.4
5. Under Seminoe High Water Line	0.2	-	0.2
6. Under Pathfinder High Water Line	1.7	-	1.7
Total	273.5	20.0	293.5
Pathfinder to Guernsey Dam			
1. Main Sterm North Platte River[1]	42.9	9.6	52.5
2. North Platte River Tributaries	108.5	30.5	139.0
3. Main Stem under Glendo High Water	2.9	1.0	3.9
4. North Platte River Tributaries under Glendo High Water Line	0.2	0.4	0.6
Total	154.5	41.5	196.0
Guernsey to Nebraska State Line			
1. Main Stem North Platte River	89.3	0	89.3
2. Minor Tributaries	6.6	1.9	8.5
3. Horse Creek and Tributaries	65.0	3.8	68.8
4. Laramie River and Tributaries	293.2	179.6	472.8
Total	454.1	185.3	639.4
North Platte River Basin Total	882.1	246.8	1,128.9
South Platte River Basin	44.0	3.1	47.1
Niobrara River Basin	2.8	0.7	3.5
Grand Total - Study Area	928.9	250.6	1,179.5
Decree Area North Platte River	296.2	29.6	325.8
Non-Decree Area North Platte River	585.8	217.2	803.0

1 Includes Kendrick Project - 23,134 adjudicated acres and 964 acres of permits in good standing.


WATER YIELDS AND DEPLETIONS
1941 - 1970
PLATTE RIVER BASIN
WYOMING
NOVEMBER 1978
Thousands of Acre Feet
10 0 10 20 30 MILES
SCALE IN MILES
LEGEND
Water yields and depletions in thousands of acre feet for the Platte River and major tributaries, average annual conditions
I is irrigation
P is phreatophytes
E is evaporation
M&I is municipal & industrial
ΔS is change in storage
C is calculated outflow
M is measured outflow
e is apparent error (calculated minus measured)
JJ partially estimated from shorter period of record
River Basin boundary
County line
Study area boundary
I = 53.6 P = 61.0 E = 36.0 M&I = 8.5 ΔS = 2.5 161.6
e = 8.4 M = 880.5 C = 888.9
I = 10.4 P = 48.0 E = 12.7 71.1
170.6
C = 99.5 JJM = 91.8 e = 7.7
P = 3.8 E = 89.1 ΔS = 50.2 143.1
I = 2.6 P = 6.5 E = 0.2 9.3
37.4
I = 77.2 P = 74.6 E = 1.5 153.3
421.5
I = 56.2 P = 77.5 E = 6.3 140.0
e = 4.8 M = 128.6 C = 133.4
273.4
e = 14.2 M = 783.5 C = 797.7
620.3
I = 114.7 M&I = 0.9 P = 69.8 E = 2.0 187.4
I = 12.7 M&I = 0.9 P = 12.2 E = 7.2 33.0
I = 52.6 P = 42.7 E = 0.5 95.8
180.8
I = 57.4 M&I = 0.9 P = 50.8 E = 4.8 113.9
I = 34.0 P = 20.4 E = 1.0 55.4
129.4
e = 1.2 M = 61.0 C = 62.2
e = -2.5 M = 86.2 C = 83.7
I = 64.3 P = 19.2 E = 14.5 98.0
C = 987.1 M = 1027.0 e = -39.9
C = 969.8 M = 1008.0 e = -38.2
179
C = 4.3
I = 6.0 P = 6.1 E = 1.5 13.6
I = 118.8 P = 25.4 E = 5.6 149.8
I = 47.2 P = 27.3 E = 5.6 80.1
111.7
78.5
I = 35.0 P = 4.4 E = 3.8 M&I = 5.5 48.7
C = 29.8
114.4
283.4
106.6
6.0
NEBRASKA
COLORADO
FREMONT CO
NATRONA CO
CONVERSE CO
NIOBRARA CO
SUBLETTE CO
PLATTE CO
GOSHEN CO
LARAMIE CO
SWEETWATER CO
CARBON CO
ALBANY CO
LOCATION MAP

LAND STATUS
PLATTE RIVER BASIN
WYOMING
DECEMBER 1979



Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.
Thematic detail compiled by state staff.
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

USDA SCS PORTLAND, OR 1979

M7-N- 23629

Wyoming is limited to the irrigation of 168,000 acres, exclusive of the Kendrick Project, from the main stem above Guernsey Reservoir and the tributaries above Pathfinder Dam. Exclusive of Seminoe Reservoir, a maximum of 18,000 acre-feet may be stored in sites above Pathfinder Reservoir in any one water year. The natural flow of the river from Guernsey Reservoir to the Tri-State Dam, including Spring Creek, is divided 25 percent to Wyoming and 75 percent to Nebraska. Glendo Reservoir may store a maximum of 40,000 acre-feet of the natural flow waters below Pathfinder Dam. These waters are divided 15,000 acre-feet for use in Wyoming below Guernsey Reservoir and 25,000 acre-feet of water to be used in western Nebraska. The storage in Glendo Reservoir for these lands, including carry-over storage, may not exceed 100,000 acre-feet.

In determining the allocation of water supplies, Pathfinder Reservoir has the highest priority, followed in order by Guernsey Reservoir, Seminoe Reservoir, Alcova Reservoir, and Glendo Reservoir.

Upper Niobrara River Compact

This compact between Wyoming and Nebraska concerns the water resources in the Niobrara River west of Range 55 West of the 6th Principal Meridian. The compact imposes restrictions on the amount of storage to 500 acre-feet per year for the main stem of the Niobrara River east of Range 62 West of the 6th Principal Meridian and from the main stem of Van Tassell Creek south of Section 27, Township 32 North, Range 60 West of the 6th P.M. Domestic and stock water ponds are restricted to 20 acre-feet. The period of the year that water may be stored is limited and all direct flow diversions are to be regulated on the basis of priority date, whether in Wyoming or in Nebraska.

The compact recognizes that ground water use may be a factor in the depletion of the surface flows of the Niobrara River. Final apportionment of ground water is waiting for the development of adequate ground water information.

Existing Water Resource Development

Under existing conditions the surface water resources are largely used. Many reservoirs have been constructed to assist irrigators and irrigation districts in managing water supplies.

Most irrigation is by direct diversion from streams with surface systems the principal method of application. Sprinkler irrigation using ground water is gaining in popularity. Automated sprinkler systems are more extensively used in the eastern part of the Basin.

Diversions made at maximum ditch capacities during the peak runoff period when crop consumption is low result in low irrigation efficiencies. Later in the season, when streamflows are reduced, irrigation efficiencies increase because of better use of the available water supply. In late season water short areas, native hay and pasture are irrigated until water supplies run short in late July or August, then harvested. If water availability could be extended through August, more profitable cash crops such as corn and sugar beets could be grown.

Construction of reservoirs to store spring runoff for late-season use and other benefits have been done as indicated by Table A-9, "Principal Reservoirs in the Platte River Basin." In some areas, more reservoir storage could be used to provide late-season irrigation water if storage was not limited by the North Platte River Decree.

Table A-9 Principle Reservoirs in the Platte River Basin
(Reservoirs of over 1,000 acre-feet capacity)
Platte River Basin, Wyoming

Reservoir	Capacity Acre-Feet	Use 1/	Water Sources
Alcova	188,938	I,P	North Platte River
Arnold	1,134	FC	North Platte River
Bates	3,112	I	Bates Creek, Dry Forks
Berg	1,375	M&I,D	Douglas Creek
Bosler	1,605	I	Bosler Slough
Case Bier	1,459	FC	Case Bier Draw
Cheyenne No. 2 (Granite Springs)	7,367	Mun	Middle Crow Creek
Crystal Lake	4,513	M&I,P	Middle Crow Creek
Dutton Creek	2,645	I,S	Dutton Creek, Rock Creek
Glendo	795,196	I,P,FC,SC,Re-Reg	North Platte River
Glomill	2,232	I	Boxelder
Goshen Hole (Springer Lake)	4,961	I	Horse Creek
Gray Reef	1,804	Re-Reg	North Platte River
Guernsey	45,288	I,D,P	North Platte River
Hawk Springs	16,735	I,S,D	Horse Creek, Hawk Springs
Hog Park	3,044	I,M&I	Little Snake River
Hutton Lake	2,500	I,Game Refuge	Sand Creek
Johnson Reservoir No. 2	2,836	I,S,D,Eng	Middle Casper Creek
King No. 1	2,216	I	Seepage Creek, Rock Creek
Kortes	4,765	P	North Platte River
Lake Hattie	68,500	I	Laramie River
LaPrele	20,000	I,D	LaPrele Creek
Nickell and Scribner	1,996	I	Pass Creek
Pathfinder	1,015,886	I,D	North Platte River
Pierce	3,133	I	Rock Creek
Pine Ridge	2,208	FC	Pine Ridge Draw
Rob Roy	8,895	I,M&I	Douglas Creek
Sand Lake	1,105	I	Tributary Rock Creek
Seminoe	1,010,825	I,D,FC	North Platte River
Sinnard	1,540	I,D	Dry Creek
Soda Lake	8,815	0	North Platte River
Spring Canyon	1,315	FC	Spring Canyon
Sportsman Lake	1,459	I,S	5-Mile Creek
Teton	1,299	FC,SC,Rec	Little Sage Creek
Turpin Park	1,317	I,S	Turpin Creek
Upper Rock Creek	2,800	Ind	Rock Creek
Upper Van Tassell	1,868	Mun	North Fork Crow Creek
Wyoming Development No. 1	9,370	I,S,D	Sybille Creek
Wyoming Development No. 2	98,934	I,D	Laramie River
Wyoming Development No. 3	94,700	I,D	Laramie River

1/ Includes uses listed on water right permits: I - Irrigation; M&I - Municipal and Industrial; P - Power; FC - Flood Control; SC - Silt Control; Re-Reg - Reregulation; Mun - Municipal; Ind - Industrial; D - Domestic; S - Stock; Eng - Steam Engines; 0 - Oil Refining or Production; Rec - Recreation.

Species of local importance include mountain lion, cottontail rabbit, snowshoe hare, red squirrel, beaver, mink, muskrat, badger, coyote, red fox, swift fox, bobcat, raccoon, ring-tail cat, striped skunk, spotted skunk, long-tailed weasel, short-tailed weasel, white-tailed jackrabbit, porcupine, geese, ducks, mourning dove, common snipe, Virginia rail, ruffed grouse, blue grouse, white-tailed ptarmigan, ring-necked pheasant, chukar, and turkey.

Table A-10 Summary of Principal Species and Importance
Platte River Basin, Wyoming

International	National	Regional	State
Moose	Elk 2/	Deer 1/	Otter
Sage Grouse	Bighorn Sheep	Antelope 3/	Pika
	Marten	Black Bear	Sharp-tailed Grouse
	Lynx		
	Sandhill Crane		

1/ Limiting habitat is 410,916 acres of critical winter range.
2/ Limiting habitat is 82,880 acres of critical winter range.
3/ Limiting habitat is 130,120 acres of critical winter range.

There are 4,409 miles of streams in the Basin which are classified trout fisheries as shown in Table A-11.

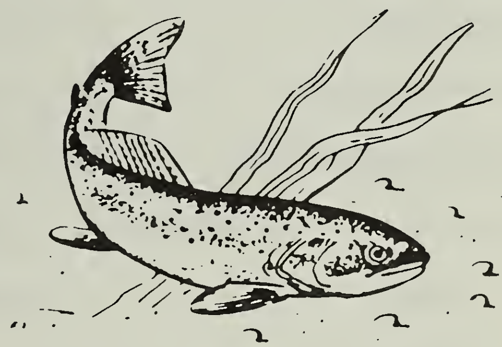


Table A-11 Stream Classification for Trout
Platte River Basin, Wyoming

Miles	Percent	Importance	Production
88	2	National	Premium
264	6	Statewide	Very Good
1,543	35	Regional	Adequate
2,249	51	Local	Low Production
265	6	None	Non-sustaining
4,409	100		

The 71,574 surface acres of lakes and reservoirs are distributed with 2 percent above 7,500 elevation, 94 percent below 7,500 feet in lowland lakes and reservoirs, and 4 percent in farm ponds. Game fish species include rainbow trout, brown trout, brook trout, cutthroat trout, golden trout, grayling, largemouth bass, crappie, walleye, yellow perch, and channel catfish.

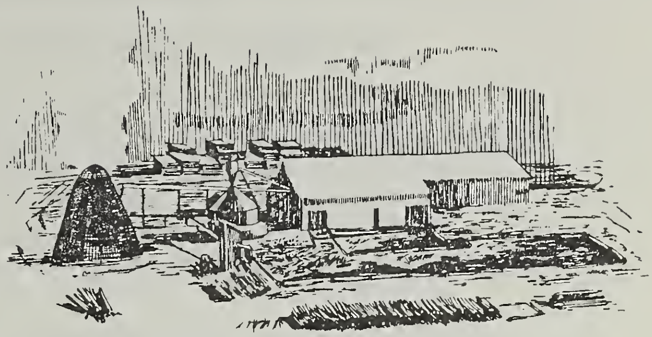
Within the Basin there has been identified habitat for several federally and state listed rare, threatened or endangered species. These species include meadow jumping mouse, black-footed ferret, least tern, purple martin, brown-capped rosy finch, scrub jay, burrowing owl, American peregrine falcon, bald eagle, western smooth green snake, and wood frog. Aquatic species include shovelnose sturgeon, northern pearl dace, finescale dace, hornyhead head chub, suckermouth minnow, and common shiner.

RANGE RESOURCES

Table A-12 Summary of Rangeland and Condition
Platte River Basin, Wyoming

Plant Community	Total Area	Range Condition: Excellent	Good	Fair	Poor
	thousand acres				
Grasslands	5,092	570	3,343	1,089	90
Meadow - Riparian	454	46	276	109	23
Sagebrush	7,048	465	4,577	1,700	306
Mountain Shrub	629	65	349	167	48
Forest with Forage	370	38	253	74	5
Salt Desert - Greasewood	372	64	200	79	29
Total	13,965	1,248	8,998	3,218	501
Percent	100	9	64	23	4

FOREST RESOURCES



Current annual timber harvest is approximately 40 million board-feet, with 92 percent coming from National Forest land. Portions of the Medicine Bow, Bridger, and Shoshone National Forests are in the Basin. Products include lumber, railroad ties, house logs, pallets, decking, posts, poles, and chips. Forest lands are also used for multiple purposes which include water yields, livestock, outdoor recreation, minerals, wildlife, and scenic beauty.

Table A-13 Summary of Forest Land Ownership
Platte River Basin, Wyoming

Ownership	Commercial	Non-Commercial
Forest Service	701,592	9,680
Bureau of Land Management	50,186	--
State of Wyoming	34,052	19,966
Private	169,994	162,680
Total	955,824	192,326

RECREATION RESOURCES

Table A-14 Summary of Platte Basin Recreation Facilities
Platte River Basin, Wyoming

Recreation Opportunity	Unit	Number
Camping and Picnicking		
Public	Acre	5,000
	Units	3,000
Private	Acre	3,000
	Units	2,000
Boating - Surface Area		
Above 7,500 Foot Elevation	Acre	2,000
Below 7,500 Foot Elevation	Acre	70,000
Golf Courses		
Nine Hole	No.	11
Eighteen Hole	No.	9
Municipal Parks and Playgrounds	No.	281
	Acre	3,200
Ski Areas	No.	4
Historic Sites		
Listed in National Register	No.	31
Pending Registration	No.	10
State Parks	No.	4
Land Area	Acre	17,000
Water Area	Acre	35,000
Sport Fishing		
Streams	Mile	4,000
Fisherman-Days	Rec-Day	586,000
Guaranteed Access	Rec-Day	228,000
Lakes and Reservoirs	Acre	72,000
Fisherman-Days	Rec-Day	1,541,000
Guaranteed Access	Rec-Day	1,329,000
Hunting and Fishing		
Public Use Areas	No.	29
Wildlife	No.	6

OTHER RESOURCE CONSIDERATIONS

Water Quality

The Wyoming Department of Environmental Quality, Water Quality Division has issued through their Rules and Regulations (Chapter I, June 27, 1979) quality standards for Wyoming surface waters. The intent of the standards are to insure that recreation, fish and wildlife propagation, and overall aesthetic values are met.

Uses specifically listed in the regulations are agriculture, fish and wildlife, industry, public water supply, recreation, and scenic value. Of these uses, protection and propagation of fish is, for most parameters, the use which requires the highest water quality. Threfore, Wyoming's surface water classes are based on this use.

There are four classes of surface water in Wyoming. Class I are those surface waters in which no further water quality degradation by point source discharges other than from dams will be allowed. Class II waters are those, other than those classified as Class I, which are determined by the Wyoming Game and Fish Department to be presently supporting game fish or have hydrologic and natural water quality potential to support game fish. Class III are those waters, other than those classifed as Class I, which are determined by the Wyoming Game and Fish Department to be presently supporting nongame fish or have the hydrologic and natural water quality potential to support nongame fish. Class IV waters are those, other than those classified as Class I, which are determined by the Wyoming Game and Fish Department to not have the hydrologic or natural water quality potential to support fish. In addition, all Class I, II, and III waters shall receive subdesignation by the Wyoming Game and Fish Department as either "cold water" or "warm water" fisheries.

Parameters which are used and for which standards have been set include: dead animals; settleable solids; floating solids; taste; odor; color; public water supply; industrial water supply; agricultural water supply; toxic materials including ammonia, benzedine, chlorine, and others; radioactive material; turbidity; dissolved oxygen; temperature; pH; coliform bacterial; undesirable aquatic life; oil and grease; total dissolved gases; and salinity. Each of these parameters have limitations relating to the different stream classes.

In the Basin the following have been designated as Class I surface waters:

1) All surface waters located within the boundaries of Congressionally designated Wilderness Areas.

2) The main stem of the North Platte River from the mouth of Sage Creek (approximately 15 stream miles below Saratoga, Wyoming) upstream to the Colorado state line.

3) The main stem of the North Platte River from the headwaters of the Pathfinder Reservoir upstream to Kortes Dam.

4) The main stem of the Sweetwater River above the mouth of Alkali Creek.

5) The main stem of the Encampment River from the U.S. Forest Service boundary upstream to the Colorado state line.

The following are Class II surface waters:

1) The main stem of the North Platte River from the backwaters of Seminoe Reservoir upstream to the mouth of Sage Creek (approximately 15 stream miles below Saratoga, Wyoming).

2) The main stem of the North Platte River from the backwaters of Guernsey Reservoir upstream to the outlet of Glendo Reservoir.

3) Douglas Creek from the mouth upstream to the confluence with Pelton Creek.

4) The main stem of Big Creek from the mouth upstream to the confluence of North Fork.

5) The main stem of the Encampment River from the mouth upstream to the National Forest boundary.

6) The entire main stem of French Creek including North and South French Creeks.

7) The portion of the main stem of Brush Creek located in Township 16 North, Range 82 West.

8) The main stem of Pass Creek upstream from Stage Station Springs.

9) The main stem of Rock Creek from County Road 61 upstream to the south line of Township 18 North, Range 78 West.

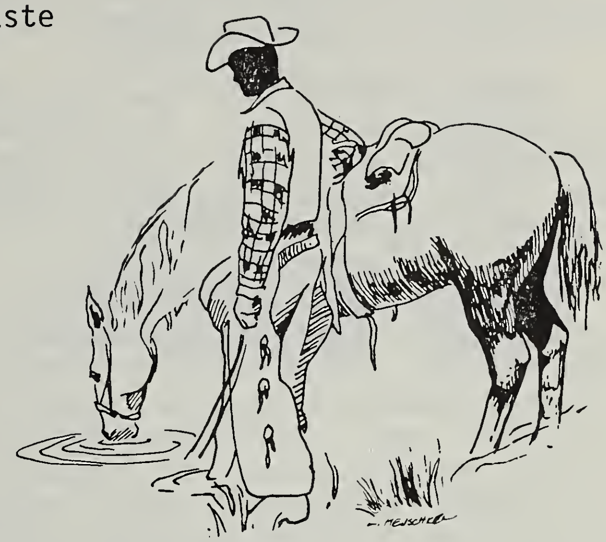
10) The main stem of the Laramie River from Jelm to the Colorado state line.

11) The main stem of Deer Creek from a point approximately four miles downstream from the Natrona-Converse County line upsteam to the county line.

12) LaBonte Creek from the mouth upstream to the Esterbrook Road.

The remainder of the surface waters in the Basin are either Class III or IV.

Existing water quality of the surface water is in general agreement with the standards. Municipal and industrial waste water sources currently present little or no problem to Basin water quality.



Irrigation return flows can carry significant amounts of sediments and total dissolved solids (TDS or salinity) into the receiving stream. Table A-15 entitled, "River Water Quality Profile - Total Dissolved Solids" indicates a general increase downstream with a jump in TDS between Alcova and Glenrock and again from Guernsey Dam to the State line. In the Alcova-Glenrock stretch this increase can be accounted for as follows:

(1) The main stem diversion in this stretch supplies water to approximately 24,000 irrigated acres, many of which can be classified as generally high in salt levels due to comparatively new projects and to soil conditions.

(2) Tributary flows from Bates, Poison Spider, and Casper Creeks, which irrigate approximately 24,000 acres, could possibly result in high TDS levels from return flow, in the inflow to the North Platte.

(3) A population of approximately 50,000 in the vicinity of Casper can, by virtue of an estimated 148 pounds of TDS per capita per year, contribute 3,700 tons (or 1.8%) of the TDS accretion along this stretch.

Table A-15 Water Quality Profile - Total Dissolved Solids 1/
Platte River Basin, Wyoming

Stream	Location	TDS (ppm)	TDS (Tons/A-F)
North Platte R.	Northgate, Colorado	190	.26
North Platte R.	Above Seminoe Reservoir	235	.32
Medicine Bow R.	Above Seminoe Reservoir	713	.97
Sweetwater R.	Near Alcova	235	.32
North Platte R.	At Alcova	309	.42
North Platte R.	Near Glenrock	478	.65
North Platte R.	At Orin	478	.65
North Platte R.	Below Guernsey Reservoir	471	.64
Laramie R.	Near Fort Laramie	463	.63
North Platte R.	At State Line	529	.72

1/ Wyoming Water Planning Report No. 9, "Water and Related Land Resources of the Platte River, Wyoming" September 1971.

The TDS concentration increases between Guernsey Reservoir and the State line is due in part to tributary inflow and also to the effects of the irrigation of some 84,000 acres of land in this reach.

There are minor water quality problems in the South Platte River drainage area in Wyoming. An environmental clean-up project has been identified for the reach of Crow Creek through Cheyenne in the Cheyenne Model Cities Program. The major concerns are pollution control and cleaning up the flood plain of Crow Creek through Cheyenne.

Salinity (total dissolved salts) in water is becoming a controversial issue due to unknowns and variables affecting its degree of concentration. Where salinity increase can be attributed to specific discharges capable of control, specific control measures shall be instituted, and a specific numerical standard may be adopted. Where salinity increase is due to irrigation much of the salinity can be controlled through proper irrigation water management. Here again, a specific numerical standard may be adopted. However, where salinity increase is due to natural accumulation of salts, the control is beyond present technology, and a numerical standard has no meaning.

Mineral Production

The development of minerals and energy sources will be a major key to the growth of the non-agricultural use of water. Table A-16 entitled, "Mineral Production" indicates what may be coming. Minerals currently make up 48 percent of the state's total assessed valuation and will continue to play a big part in the economy of both the state and the Basin.

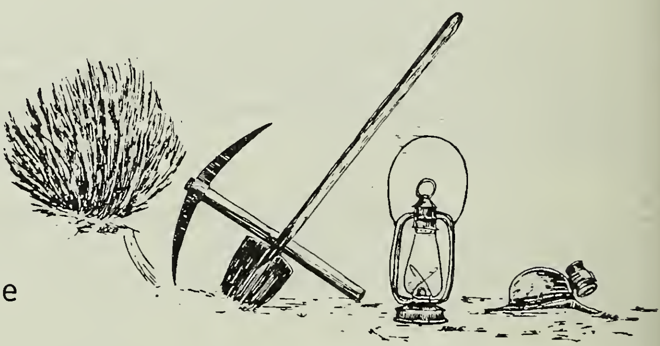


Table A-16 Mineral Production
Platte River Basin, Wyoming

	Thousands						
Year	Crude Oil bbls	Natural Gas mcf	Coal tons	Uranium Ore tons	Bentonite Clay tons	Limestone: Shale Gypsum Trona tons	Crushed Stone Sand Gravel tons
1974	4,215	11,312	14,000	2,308	44	427	3,000
Trend	decr	decr	incr	incr	incr	none	none
2000	--	--	200,000	--	50	450	3,000
Reserve	low	low	vast	55,500	large	large	large

Municipal and Industrial Water Use Projections

Table A-17 entitled, "Summary of Municipal and Industrial Water Use Projections" shows a summary of the projected consumptive water requirements. By 2020, 149,000 acre-feet will be devoted to the municipal and industrial growth, nearly all of which will be supplied from surface water supplies.

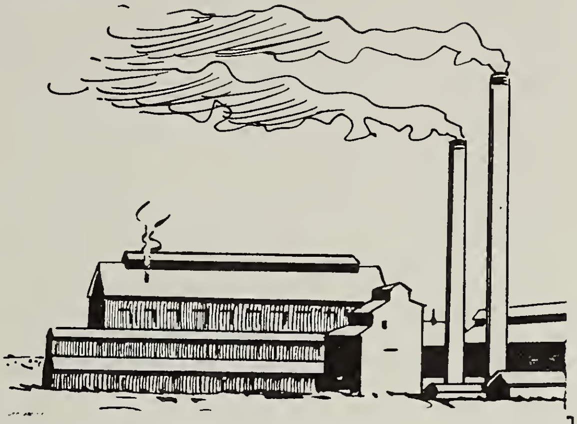


Table A-17 Summary of Municipal and Industrial Water Use Projections 1/
Platte River Basin, Wyoming

	1970	1980	2000	2020
	----Thousand	Acre-Feet	Per	Year---
Industry				
Coal	5	20	65	80
Petroleum	6	5	3	3
Uranium	1	5	10	4
Other	1	1	2	2
Total	13	31	80	89
Power Generation				
Wyoming Coal Gas			15	15
Laramie River Station				23
Municipal	13	15	20	22
Total Surface Water Consumed				
Industry	10	24	68	83
Power			15	38
Municipal	6	8	13	15
Total Ground Water Consumed	10	14	19	13
Total	26	46	115	149

1/ Wyoming Water Planning Program, Report No. 9, "Water and Related Land Resources of the Platte River, Wyoming", September 1971.

APPENDIX B

DEVELOPMENT OF ALTERNATIVE FUTURES

APPENDIX B

DEVELOPMENT OF ALTERNATIVE FUTURES

Including a Synopsis of Each Future

*   *   *

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TABLES

APPENDIX B

A L T E R N A T I V E   F U T U R E S

PURPOSE

This appendix briefly documents the methodology, concepts, definitions, and assumptions used to define the Alternative Futures used in the Platte Cooperative River Basin Study. The table displays the results of all the evaluations made for each of the Alternative Futures shown in the main report.

The methodology used in this study is designed to blend with on-going planning steps that involve the public. The public involvement process is to devise a way for people to identify immediate concerns and select long range goals. The display and discussion of selected Alternative Futures, followed by public suggestions for new alternatives, is one way to involve the public in future long range planning.

DEFINITIONS AND ASSUMPTIONS

The Water Resources Council established principles and standards for planning the use of water and related land resources such that plans will be directed to improvement in the quality of life through contribution to the objectives of National Economic Development and Environmental Quality. These objectives are, by definition, future oriented and are necessary to guide planning decisions. 1/ The question is, which future should decisionmakers reach for?

This study developed a systematic way to determine several potential futures, their natural resource product requirements, and related management consequences. A list of factors, each with several possibilities, were used to help define the future(s). Table B-1 entitled "Factors for Defining Alternative Futures" shows the factors and selected possibilities. Table B-2, "Alternative Futures" shows the framework for each of the alternative futures analyzed.

1/ "Economic and demographic projections should be consistent with the Council's national baseline projections (OBERS) which reflect differential regional growth patterns and probable future population and economic conditions of all regions of the Nation. Additional projections representing other views of the future may also be made. Such projections, however, should be made on a comparable basis with the baseline projections to enable valid comparisons to be made between alternative plans based on these different projections." Federal Register Volume 38, Number 174, page 24827.

Table B-1 Factors Used In Defining Alternative Futures
Platte River Basin, Wyoming

Assumptions
Population - OBERS E, State of Wyoming
Demand (Food & Fiber) - OBERS E'
Water Compact & Transbasin Diversion No change, importation of water from the Green River Basin.
Price Level & Discount Rate - Water Resource Council, SRS 5-year average
Irrigation Return Flow - Status Quo, reduce return flow by 50%, 75%, and reduce to zero
Land Conversion - Status Quo, allow conversions on limited classes of land. Allow no conversion.
M&I Development of Surface Water - Status Quo, WWPP.
Real Estate Taxation - Status Quo
Drought _ Average irrigation water supply less than average supply.
Petroleum Energy - Status Quo
Cooperatives - Status Quo
Technology - Modified historical trend.
Federal Staffing for Resource Development - Status Quo.
Excluded (Restricted) Land Activities - Status Quo.
State Programs for Agricultural Development - Status Quo.
Big Game Damage Reimbursement - Status Quo.
Recreation Land Trespass Adjustment - Status Quo
Renewable Resources Sustained Yield - Yes.
Unemployment - Status Quo.

Table B-2 Agricultural Alternative Futures
Platte River Basin, Wyoming

Assumption Indices \ Alternative Future	I	II	III	IV	V	VI	NED	EQ	Baseline
1. Population	E	E	State of Wyoming	E	E	State of Wyoming	E	E	E
2. Demand (Food & Fiber)	E'	E'	E'	Free	E'	E'	Free	E'	E & E'
3. Water Decree & Compact	Status Quo	Status Quo	Status Quo	Status Quo	Green River Import	Green River Import	No Limitation	Status Quo	Status Quo
4. Price Level	Water Resource Council	Water Resource Council	Water Resource Council	SRS 5 years: Average	Water Resource Council	Water Resource Council	Water Resource Council	Water Resource Council	Water Resource Council
5. Discount Rate	---------- Water Resource Council ----------								
6. Zero Discharge	Status Quo	Entire Curve	Status Quo	Entire Curve	Status Quo	Status Quo	Status Quo	Status Quo	Status Quo
7. Land Conversion	---------- Meet Crop Demand ----------								1975
8. M&I Development (Coal Growth)	Status Quo	Status Quo	WWPP Estimates	Status Quo	Status Quo	WWPP Estimates	Status Quo	Status Quo	1975
9. Real Estate Taxation	---------- Status Quo ----------								1975
10. Drought	Average Precip.	Average Precip.	Average Precip.	Average Precip.	Average Precip.	75% of Average Precipitation	Average Precip.	Average Precip.	Average Precip.
11. Quality of Life-Social Conscious	---------- Increasing Environmental Quality ----------							Erosion Limitation	1975
12. Petroleum Energy	---------- Status Quo ----------								
13. Cooperatives	---------- Status Quo ----------								
14. Technology	---------- Modified Historical Trend ----------								
15. Federal Action Programs	---------- Status Quo ----------								
16. Budget (Federal Staff)	---------- Status Quo ----------								
17. Excluded (Restrict) Land Activities	---------- Status Quo ----------								
18. Federal Cost Share	---------- Status Quo ----------								
19. Percent Participation	---------- Status Quo ----------								
20. State Programs Financial Aid	---------- Status Quo ----------								
21. Percent Participation	---------- Status Quo ----------								
22. Damage Reimbursement	---------- Status Quo ----------								
23. Land Trespass Adjustment	---------- Status Quo ----------								
24. Sustained Yield	---------- Yes ----------								
25. Unemployment	---------- Status Quo ----------								

Starting from a list of 192 possible Platte futures eight primary futures were selected for further analysis. These are pertinent to the development of the Basin's agricultural resources. A ninth future relating to lifting acreage limitations was dropped when it became apparent that the limitation was having no effect. The same forestry future was used for all agriculture futures except the NED and EQ futures. Following is a synopsis of each of the Alternative Futures analyzed in the course of this study.

ALTERNATIVE FUTURES SYNOPSES

Alternative Future I

Synopsis

Alternative Future I analyzes the capability of the Basin's resources to meet its projected share of national demand. Both resource limitations and lack of economic incentive may cause an inability to produce the national share. Forestry aspects of the alternative were to meet national demand for timber with low-quality, timbered roadless areas in wilderness.

Alternative Future II

Synopsis

This alternative future responds to the question of zero discharge of irrigation return flows. The Basin attempts to produce its projected agricultural share of national demand.

The analysis includes points along a curve showing the cost and effects of reducing irrigation return flows by 50, 75, and 100 percent. The percent reductions refer to reductions of return flows that occur in Alternative Future I.

The sprinkler system was selected as the most likely system to meet the zero discharge constraints. There are other ways including tail water recovery ponds and better management of existing surface systems, but it was felt that sprinklers would be the most reliable and would properly reflect the extra cost and management involved. Forestry aspects were analyzed in the context of meeting the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

Alternative Future III

Synopsis

Alternative Future III responds to the question of municipal and industrial competition for developed water supplies. Estimated diversion amounts of water used for power production in the years

1985, 2000, and 2020 are used. These diversions represent transfers of agriculture water rights. Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

Alternative Future IV

Synopsis

Alternative Future IV responds to the zero discharge of irrigation return flows as does Alternative Future II. The difference is that the agricultural production is not limited to the Basin's share of national demand. Also price level was changed from WRC Price to a five year average of Basin prices as reported to the Wyoming Crop and Livestock Reporting Service.

The analysis includes several points along a curve showing the cost and effects of reducing irrigation return flows by 50, 75, and 100 percent. The percent reductions refer to the return flow amounts that occur in Alternative Future IV with no constraint on return flows.

Sprinkler systems were selected to represent the cost and management situation to be faced in reducing return flows. The extra costs involved were viewed as the main drive behind a displacement or change in existing irrigation patterns.

Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

Alternative Future V

Synopsis

Alternative Future V responds to the question of importing Green River water into the Platte Basin. The Basin is limited to producing its share of national needs. The analysis is intended to show the effects on agricultural revenues, production practices, and environmental factors with 50 percent, 100 percent, and an unlimited increase in available water to irrigated land along the North Platte River below Pathfinder Reservoir.

Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderness.

Alternative Future VI

Synopsis

Alternative Future VI responds to the question of importing Green River Basin water. The Platte Basin water supply for agricultural use

is reduced by requiring the anticipated municipal and industrial needs, as in Alternative Future III, be met. Also, a drought in the Basin is simulated by reducing the water yields from each watershed.

Although this future limits the Basin's production to a national share, the impacts of surface water competition and drought limited supplies evaluates the usefulness of water imports.

Forestry aspects were analyzed to meet the Basin's share of national demand for timber with low-quality, timbered roadless areas in wilderenss.

National Economic Development Alternative Future

Synopsis

The National Economic Development (NED) Alternative Future displays the effects of adding late season irrigation water supply. The economic incentive was used to define a series of points along a curve comparing income and water development. This shows resource capability for watershed development having all resources operating at full economic potential. The NED Alternative Future is then the one that maximizes economic return to the Basin.

Forestry aspects of the NED Alternative Future is to produce the Basin's share of national timber demand, then maximize the amount of timber harvest after 2020. All timbered roadless areas are used for production. It is assumed that economic returns, jobs, and diversification into a stronger forest products industry would maximize economic development.

Environmental Quality Alternative Future

Synopsis

The Environmental Quality (EQ) Alternative Future displays the effect of reducing the levels of soil erosion on agricultural resource use and income. Evaluations were made for 90, 80, and 70 percent of Alternative Future I erosion. Soil erosion is used as an indicator of environmental quality.

The forestry aspects maximize the use of wilderness areas and environmental quality while meeting the Basin's share of timber through 2020. After 2020, timber harvest levels are allowed to increase only if the operation increases environmental quality. Environmental quality is a combination of water quality, air quality, wildlife habitat quality, and development and use quality indices. In this future all roadless areas are used for wilderness.

Baseline Future

Synopsis

The Baseline Future is made up of projections of the Basin's share of national demands for production combined with the current situation in resource development and use. The Baseline Future plays an important part in the analysis of other alternative futures because it represents the most "surprise-free" projection available.

The "surprise-free" projection is derived by extrapolating current or emerging tendencies that reflect current expectations or "one which seems as plausible as any other specific possibility". (Kahn, 1967) It was constructed by using series "E" population estimates developed by OBERS, and other nationally consistent estimates of economic activity and land use expected up through the year 2020.

The Baseline Future does not represent a concensus about what the desired future should be. But, it does represent the Basin's share of national agricultural and forestry production. For outputs or impacts that have no quantifiable national share, or where reliable projections are not possible, the 1975 situation was used as the base.

Tables 2-6 through 2-9 in Chapter 2 of the main report, and summarized in Table B-3, show the baseline projections for the three time periods of 1985, 2000, and 2020. The tables show the outputs or impacts and the measurement unit. Numbers down the left side of the table refer to both a set of footnotes and to the line item in the overall table (Alternative Futures Table) used to display each alternative future. The footnotes can be found in Chapter 2 (Tables 2-6 through 2-9) of the main report and will not be repeated here.

METHOD OF ANALYSIS

The analysis of alternative futures stems from two resource allocation models. The forestry model was used to quantify the outputs and impacts of multiple use management on National Forest, Bureau of Land Management, state, and private forest land. The interactions used to assess forestry related tradeoffs include water yield and quality, forage production, production economics, timber management, payment in lieu of taxes, erosion and sediment, outdoor recreation including wilderness and backcountry experience, petroleum fuel use, and environmental quality indexes for air, water, development and use, and wildlife.

The agricultural resource allocation model was used to maximize net revenue subject to land and water resource availability. The interactions used to assess agriculture related tradeoffs include

Table B-3 Baseline Future Projections

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River 8asin, Wyoming

OUTPUTS ANO IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411						
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910						
3. 8arley	Bushels	3	618	643	621						
4. Ory Beans	Cwt.	4	234	152	96						
5. Corn	8ushels	5	2,332	3,289	3,932						
6. Corn Silage	Tons	6	371	468	575						
7. Oats	Bushels	7	1,300	1,654	2,000						
8. Potatoes	Cwt.	8	570	657	735						
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649						
10. Sugar Beets	Tons	10	478	590	755						
11. Increased Irrigation Efficiency	Acres	11	93	90	78						
12. North Platte Decree Irrigation	Acres	12	49	49	43						
13. Irrigation Outside Decree Area	Acres	13	204	198	184						
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334						
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059						
16. Agriculture Land Flooding	Acres	16	91	91	91						
17. Urban Flooding	Acres	17	2	2	2						
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18						
19. Irrigation Return Flows	Acre-ft.	19	104	102	96						
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163					NOT APPLICABLE	
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886		NOT APPLICABLE				
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4						
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6						
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127						
25. Guaranteed Hunting Access	Rec-day	25	280	280	280						
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383						
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40						
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000						
29. Rangeland with Added Treatment	Acres	29	38	38	3,433						
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130						
31. Critical Areas - Big Game Use	AUM	31	33	33	33						
32. Critical Areas - Livestock Use	AUM	32	76	76	102						
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39						
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281						
35. Critical Big Game Area	Acres	35	590	590	590						
36. Protectd Aquatic Animal Species	Miles	36	316	318	275						
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753						
38. Lakes & Reservoirs Surface	Acres	38	72	72	72						
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212						
40. River & Stream Fishing	Rec-day	40	612	829	1,274						
41. Big Game Hunting	Rec-day	41	219	315	517						
42. Small Game & Bird Hunting	Rec-day	42	137	206	374						
43. Boating, Swimming, & Water Skiing	Rec=day	43	1,021	1,021	1,021						
44. Designated Wilderness	Acres	44	43	43	43						
45. Managed Backcountry	Acres	45	247	247	247						
46. Wilderness Experience	Rec-day	46	74	74	74						
47. Backcountry Experience	Rec-day	47	50	50	50						
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000						
49. National Forest Timber Harvest	8oard-ft.	49	38,500	44,280	48,380						
50. National Forest Net Present Worth	Dollars	50	--	--	--						
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260						
52. State & Private Net Present Worth	Dollars	52	--	--	--						
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800						

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 cf this report.

the production costs and net returns; crop and livestock production; feed grains; pasture; soil loss; labor; antelope, deer, elk, and grouse habitat; irrigation water use; ground and surface water irrigation supply; irrigation systems and return flows; land conversions, and conservation treatment.

The amounts of production of goods, services, and restraint of activities inherent in the selected alternative future was used to control the two allocation models such that tradeoffs in economics and impacts could be calculated. The agricultural model was used to develop information for the six alternative futures, as well as the NED and EQ futures. The forestry situation was simplified into three situations; NED, EQ, and a compromise generated at public meetings. The impacts for the compromise is displayed in all six of the agriculture alternative futures.

ALTERNATIVE FUTURE DISPLAYS

Each of the alternative futures analyzed has six display tables. These are:

SYNOPSIS AND COMMITMENTS 1/ FOR ALTERNATIVE FUTURE

EFFECTS OF ALTERNATIVE FUTURE

NATIONAL ECONOMIC DEVELOPMENT ACCOUNT

ENVIRONMENTAL QUALITY ACCOUNT

REGIONAL DEVELOPMENT ACCOUNT

SOCIAL WELL-BEING ACCOUNT

Following is a discussion of each of the display tables.

Synopsis and Commitments for Alternative Future

This table gives a synopsis of the alternative future analyzed. It shows the necessary commitments needed to meet the goals of the alternative future by the year 2000. The commitments are in terms of USDA man-years and program dollars, state program dollars and local dollars.

The table shows the Basin concerns and the specific study objectives units of measure. The units of measure are key items used to measure the effect an alternative future has on individual Basin concerns. Also shown is the present situation for each of the units of measure.

1/ Commitment is dependent upon the availability of the resources and upon the directives of the U.S. Congress and the State Legislature.

Finally, shown is the noncumulative totals by time frame for each of the units of measure. If an alternative future goals were to be met by the year 1985, it would require the totals shown in the column under the year 1985. Similarly, if the goals were to be met by the year 2020, it would require the total shown in the column under the year 2020.

Effects of Alternative Future

This table is a comparison table of a particular alternative future against the Baseline Future.

There are 53 individual outputs or impacts that are used in the comparison. These 53 items are the same ones identified and defined in the Baseline Future discussed earlier in Chapter 2.

The totals shown in the table are like the previous table in that they are noncumulative.

Basicially there are three parts to this table. The first part displays the baseline future projections by the three time frames. The second part displays the particular alternative future being analyzed. The third part then shows the difference between the alternative future and the baseline projections.

This table is the base table used to measure the effects an alternative future has upon the Basin.

National Economic Development Account

This table shows 27 outputs and impacts that are used to measure the effects of an alternative future on national economic development.

The totals, which are noncumulative, are compared to the Baseline Future to show the effects. Line items 1 through 5 are from an input-output (I-O) computer model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not included in Lines 1 through 4. See "Concepts used in the Planning Process" Working Paper for more detail. Private agriculture revenue and costs were based on a linear programming (LP) computer model and reflect primary effects. Outputs from the LP were used as inputs to the I-O.

Environmental Quality Account

This table shows 30 outputs or impacts that are used to measure the effects of an alternative future on environmental quality of the Basin.

The table has three major parts. These are (1) Areas of Consideration; (2) Water, Air, Land Quality; and (3) Irreversible Commitments.

The Baseline Future is compared with the alternative future to show how the alternative future affects the enviornmental quality of the Basin. Again, all totals shown are noncumulative.

Regional Development Account

This table shows the effect an alternative future has on regional development. Displayed are 19 outputs or impacts used to measure effects. These measurements are to four major areas, which are (1) Income Effects; (2) Number of Jobs; (3) Type of Jobs; and (4) Population Effect. These items were only measured for the time frame 1985.

Social Well-Being Account

This table uses 31 outputs or impacts to measure the effect an alternative future has on the social well-being of the Basin. The 31 items are grouped into 5 major groups. These are: Household Income by Sectors; Minority and Women Employment; Life, Health, and Safety; Loss of Future Options; and Reserve Production Capacity.

Following are the displays for the alternative futures analyzed in this study.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE I

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future I agricultural production is not to exceed its share of national food and fiber demand. Any shortfalls created because of resource limitation, mainly water and land supply and/dr lack of economic incentive for that kind of production are identified.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	104	102	96	--	--	--	--
	2. Acres with Return Flows	Acre	243	182	181	163	--	--	--	--
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	5,831	5,803	6,665	--	--	--	--
	4. Conservatn Land Treatmt 1/	Acre	1,199	1,082	1,142	949	263	457	754	1,359
	5. Proper Land Use Change	Acre	0	379	375	379	19	154	248	450
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	93	90	78	126	995	421	7,611
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	171	164	162	44	379	112	2,731
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	70	70	70	11	88	37	677
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,433	3	31	23	38
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	--	--	--	--
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	--	--	--	--
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,051	5,102	5,886	--	--	--	--
Rare, Threatened, and Endangered Species										
	15. Protected Aquatic Animal Habitat	Mile	0.352	0.316	0.318	0.275	--	--	--	--
	16. Protected Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	--	--	--	--
	19. Guaranteed Huntg Access	RD	280	280	280	280	--	--	--	--
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	10	103	0	0
	21. Backcountry Management	Acre	247	126	126	126	3	26	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	--	--	--	--
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	249	5,817	204	136
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							806	14,279	2,505	13,747

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ALTERNATIVE FUTURE I

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot Note*	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	487	569	598	-196	-227	-312
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	327	338	0	-141	-237
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	8ushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar 8eets	Tons	10	478	590	755	309	416	449	-169	-174	-306
11. Increased Irrigation Efficiency	Acres	11	93	90	78	93	90	78	0	0	0
12. North Platte Oecree Irrigation	Acres	12	49	49	43	49	49	43	0	0	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	204	198	184	0	0	0
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	47,277	58,010	73,334	0	0	0
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	57,755	62,936	67,059	0	0	0
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	104	102	96	0	0	0
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	182	181	163	0	0	0
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,051	5,102	5,886	0	0	0
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-Day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-Day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,433	0	0	0
30. Critical 8G Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	76	78	102	0	0	0
33. Non-Crit. Area - 8ig Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,465	2,442	3,281	0	0	0
35. Critical 8ig Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protected Aquatic Animal Species	Miles	36	316	318	275	316	318	275	0	0	0
37. Protected Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-Day	39	1,062	1,440	2,212	1,541	1,541	1,541	+479	+101	-671
40. River & Stream Fishing	Rec-Oay	40	612	829	1,274	586	586	586	-26	-243	-688
41. 8ig Game Hunting	Rec-Day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-Day	42	137	206	374	84	84	84	-53	-122	-290
43. 8oating, Swimming, & Water Skiing	Rec-Oay	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-Oay	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-Oay	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Oiscount to Present 1975.				
53. Lumber Produced, Lumber Scale	8oard-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Oetailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year:	Base-Line Future	Alternative Future I			
1. Agricultural Crop Sales	$	1985:	114,104	114,104			
2. Livestock Sales	$	1985:	80,852	80,852			
3. Forestry Sector Sales	$	1985:	11,019	11,019			
4. Service Sector Sales	$	1985:	41,462	41,462			
5. Total of Private Sales (1)	$	1985:	336,883	336,883			
6. Agriculture - Private (2)	$	1985:	47,277	47,277			
Net Revenue	$	2000:	58,060	58,060			
	$	2020:	73,334	73,334			
7. Agriculture - Private (2)	$	1985:	57,755	57,755			
Production Cost	$	2000:	62,936	62,936			
	$	2020:	67,059	67,059			
8. Water Devel. Projects	$	1978:	(3)	0			
Public Cost	($)	1978:	(3)	0			
Private Cost	($)	1978:	(3)	0			
9. Forestry Development	$	1975:	(3)	-5,575			
Public Pres Worth	$	1975:	(3)	-6,804			
Pvt Nt Pres Worth	$	1975:	(3)	1,629			
10. Increased	Ac	1985:	93	93			
Irrigation	Ac	2000:	90	90			
Efficiency	Ac	2020:	78	78			
11. Full Water	Ac	1985:	171	171			
Supply	Ac	2000:	164	164			
Irrigated	Ac	2020:	162	162			
12. Land Use Change	Ac	1985:	367	367			
Rangeland to	Ac	2000:	358	358			
Dry Cropland	Ac	2020:	358	358			
13. Land Use Change	Ac	1985:	6	6			
Rangeland to	Ac	2000:	0	0			
Irrigated Croplnd	Ac	2020:	1	1			
14. Land Use Change	Ac	1985:	6	6			
Dry Cropland to	Ac	2000:	17	17			
Irrigated Croplnd	Ac	2020:	20	20			
15. Rangeland with	Ac	1985:	38	38			
Treatment	Ac	2000:	38	38			
	Ac	2020:	3,433	3,433			
16. Municipal and	AF	1985:	18	18			
Industrial Water	AF	2000:	18	18			
	AF	2020:	18	18			
17. Agricultural	Ac	1985:	91	91			
Flooding	Ac	2000:	91	91			
	Ac	2020:	91	91			
18. Livestock	AUM	1985:	2,581	2,581			
	AUM	2000:	2,560	2,560			
	AUM	2020:	3,423	3,423			
19. Zero Discharge	Ac	1985:	62	70			
Systems	Ac	2000:	62	60			
	Ac	2020:	62	64			
20. Wldrns-Backcntry Expr	RD	2020:	124	51			
21. Fishing	RD	1985:	1,674	2,127			
	RD	2000:	2,269	2,127			
	RD	2020:	3,486	2,127			
22. Big Game	RD	1985:	219	195			
Hunting	RD	2000:	315	195			
	RD	2020:	517	195			
23. Small Game and	RD	1985:	137	84			
Bird Hunting	RD	2000:	206	84			
	RD	2020:	374	84			
24. Boating	RD	1985:	1,115	1,115			
Swimming	RD	2000:	1,273	1,273			
Water Skiing	RD	2020:	1,514	1,514			
25. Total Timber Harvest	MBF	1975:	15,530	21,670			
26. Annual	MBF	1985:	47	47			
Timber	MBF	2000:	54	54			
Harvest	MBF	2020:	59	59			
27. Thinning and	Acres	1985:	14.6	6.9			
Planting	Acres	2000:	28.0	81.9			
Accumulated	Acres	2020:	44.2	118.2			

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.

(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Output from the LP were used as inputs to the I-O.

(3). Information not available.

ENVIRONMENTAL QUALITY ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut.I			
Areas of Consideration							
1. Rivers and Streams	Mi	2020	4.4	4.4			
2. Lakes and Reservoirs	Ac	2020	71.6	71.6			
3. Protected Aquatic	Mi	1985	316	316			
Animal Habitat	Mi	2000	318	318			
	Mi	2020	275	275			
4. Protected Terrestrial	Ac	1985	845	845			
Animal Habitat	Ac	2000	845	845			
	Ac	2020	753	753			
5. Critical	Ac	1985	552	552			
Big Game	Ac	2000	552	552			
Habitat	Ac	2020	460	460			
6. Critical	AUM	1985	33	33			
Big Game	AUM	2000	33	33			
Use	AUM	2020	33	33			
7. Wilderness Class	Ac	2020	290	164			
8. Backcountry Mgt	Ac	2020	(1)	126			
Water, Air, Land Quality							
9. Non - Point Source	AcFt	1985	104	104			
Pollutn-Irrigtn	AcFt	2000	102	102			
Return Flows	AcFt.	2020	96	96			
10. Non - Point Source	Ac	1985	182	182			
Polutn - Acres	Ac	2000	181	181			
With Flows	Ac	2020	163	163			
11. Water Erosion	Ton	1985	5,831	5,831			
Annual Total	Ton	2000	5,803	5,803			
	Ton	2020	6,665	6,665			
12. Water Erosion	Ac	1985	5,051	5,051			
Over 0.5 t/a/yr	Ac	2000	5,102	5,102			
	Ac	2020	5,886	5,886			
13. Land Treatment	Ac	1985	607	607			
Minimum	Ac	2000	604	604			
Tillage	Ac	2020	606	606			
14. Land Treatment	Ac	1985	122	122			
Wind	Ac	2000	110	110			
Strip	Ac	2020	113	113			
15. Land Treatment	Ac	1985	209	209			
Contour	Ac	2000	285	285			
Farming	Ac	2020	105	105			
16. Land Treatment	Ac	1985	144	144			
Permanent	Ac	2000	143	143			
Cover	Ac	2020	125	125			
17. Agric Land Quality	Indx	1985	1.25	1.25			
Antelope Habitat	Indx	2020	1.36	1.36			
18. Agric Land Quality	Indx	1985	1.32	1.32			
Deer Habitat	Indx	2020	1.51	1.51			
19. Agric Land Quality	Indx	1985	1.57	1.57			
Elk Habitat	Indx	2020	1.95	1.95			
20. Agric Land Quality	Indx	1985	1.34	1.34			
Grouse Habitat	Indx	2020	1.49	1.49			
21. Forestland Quality	Indx	1985	0.92	0.92			
Air Quality	Indx	2020	0.89	0.89			
22. Forestland Quality	Indx	1985	0.86	0.86			
Water Quality	Indx	2020	0.86	0.86			
23. Forestland Quality	Indx	1985	0.88	0.88			
Wildlife Quality	Indx	2020	0.87	0.87			
24. Forestland Quality	Indx	1985	0.98	0.98			
Development & Use	Indx	2020	0.96	0.96			
Irreversible Commitments							
25. Petroleum Fuel Use	Gal	1985	(1)	21,277			
Annual Total	Gal	2000	(1)	23,494			
Rec Ag For	Gal	2020	(1)	25,362			
26. Prime Cropland Lost							
To Project	Ac	2020	(1)	(1)			
To Attrition	Ac	2020	(1)	(1)			
27. Prime Forestland Lost	Ac	2020	(1)	(1)			
28. Crit Wildlf Area Lost	Ac	2020	(1)	(1)			
29. Rivers & Streams Lost							
To Project	Mi	2020	(1)	0			
To Attrition	Mi	2020	(1)				
30. Historic/Archeol Lost	Site	2020	(1)	0			

(1) Information not available.

R E G I O N A L   D E V E L O P M E N T   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut.I			
Income Effects							
1. Household Income	$	1985	164,727	164,727			
	$	2000	(1)	(1)			
	$	2020	(1)	(1)			
2. Gov't Expenditures	$	1985	387,079	387,079			
	$	2000	(1)	(1)			
	$	2020	(1)	(1)			
Number of Jobs							
3. Agricultural Crops	No.	1985	3.3	3.3			
Permanent Jobs	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
Seasonal Jobs	No.	1985	(1)	(1)			
4. Livestock Industry	No.	1985	2.1	2.1			
Permanent Jobs	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
Seasonal Jobs	No.	1985	(1)	(1)			
5. Forestry Indusry	No.	1985	0.4	0.4			
Permanent Jobs	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
Seasonal Jobs	No.	1985	(1)	(1)			
6. All Other Sectors	No.	1985	6.9	6.9			
Permanent Jobs	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
Seasonal Jobs	No.	1985	(1)	(1)			
7. Project Generatd Jobs	No.	1979	(1)	(1)			
Type of Jobs							
8. Professional & Techn	No.	1985	0.7	0.7			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
9. Managerial & Admin	No.	1985	4.4	4.4			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
10. Sales and Clerical	No.	1985	1.5	1.5			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
11. Craftmen Foremen Mec	No.	1985	1.2	1.2			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
12. Equipment Operators	No.	1985	0.9	0.9			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
13. Service Workers	No.	1985	1.6	1.6			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
14. Non-Farm Labor	No.	1985	0.7	0.7			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
15. Farm Labor & Foremen	No.	1985	1.7	1.7			
Total	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
Population Effect							
16. Agricultural Crop	No.	1985	10.8	10.8			
Population	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
17. Livestock Industry	No.	1985	6.9	6.9			
Population	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
18. Forestry Industry	No.	1985	1.3	1.3			
Population	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			
19. All Other Sectors	No.	1985	22.3	22.3			
Population	No.	2000	(1)	(1)			
	No.	2020	(1)	(1)			

(1) Information not available.

SOCIAL WELL-BEING ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alternative Future I				
Household Income By Sectors								
1. Agricultural Crops	$	1985	62,140	54,022				
Income	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
2. Livestock Industry	$	1985	39,375	38,816				
Income	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
3. Forestry Industry	$	1985	3,198	3,199				
Income	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
4. Construction Industry	$	1985	5,333	5,552				
Income	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
5. Auto Dealers and	$	1985	2,055	2,080				
Gas Stations	$	2000	(1)	(1)				
Income	$	2020	(1)	(1)				
6. Eating & Drinking &	$	1985	4,069	4,216				
Lodging Places	$	2000	(1)	(1)				
Income	$	2020	(1)	(1)				
7. Other Retail Persons,	$	1985	6,301	6,529				
Repair Services	$	2000	(1)	(1)				
Income	$	2020	(1)	(1)				
8. Governmental	$	1985	27,653	26,437				
Services	$	2000	(1)	(1)				
Income	$	2020	(1)	(1)				
9. All Other Sectors	$	1985	26,297	23,876				
Income	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
Minority & Women Employmt								
10. Professional, Techn,	No.	1985	0.537	0.525				
Admin, & Managerial	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
11. Sales People and	No.	1985	1.166	1.142				
Clerical Help	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
12. Craftsmen, Foremen	No.	1985	0.094	0.093				
& Mechanics	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
13. Equipment Operators	No.	1985	0.204	0.203				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
14. Service Workers	No.	1985	1.403	1.418				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
15. Non-Farm Laborers	No.	1985	0.087	0.084				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
16. Farm Labor and	No.	1985	0.315	0.291				
Foremen	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Life, Health, and Safety								
17. No Fld Protectn Agric	Ac	1979	(1)	(1)				
18. No Fld Protectn Urban	Ac	1979	(1)	(1)				
Loss of Future Options								
19. Crop Futures Foregone	Index	1985	(1)	1.097				
20. Water Use F Foregone	Index	1985	(1)	0.020				
21. Range & Wldlf F Fgone	Index	1985	(1)	0.228				
22. Fishg & Huntg F Fgone	Index	1985	(1)	0.000				
23. Recreatn F Foregone	Index	1985	(1)	0.960				
24. Timber Harvst F Fgone	Index	1985	(1)	0.000				
25. 1985 Futures Foregone	Index	1985	(1)	2.305				
26. 2000 Futures Foregone	Index	2000	(1)	2.455				
27. 2020 Futures Foregone	Index	2020	(1)	3.804				
Reserve Productn Capacity								
28. Agriculturl Cropland	Ac	2020	(1)	970				
29. Livestock Production	AUM	2020	(1)	270				
30. Timber Production	MBF	2020	(1)	53				
31. Ground Water Reservoir	AF	2020	(1)	57				

(1) Information not available.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE II 0 Percent Return Flow Reduction

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future II responds to the question of zero discharge of irrigation return flows. The Basin's agricultural production is not to exceed its share of national demand for food and fiber. Several points along a curve show the cost of meeting 100 percent return flow reduction. This table shows the effect of 0 percent return flow reduction.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	104	102	96	–	–	–	–
	2. Acres with Return Flows	Acre	243	182	181	163	–	–	–	–
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	5,831	5,803	6,665	–	–	–	–
	4. Conservatn Land Treatmt 1/	Acre	1,199	1,082	1,142	949	263	457	754	1,359
	5. Proper Land Use Change	Acre	0	379	375	379	19	154	248	450
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	93	90	78	126	995	421	7,611
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	171	164	162	44	379	112	2,731
Flood Protection	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge	9. Zero Discharge Systems	Acre	62	70	70	70	11	88	37	677
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,433	3	31	23	38
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,051	5,102	5,886	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protected Aquatic Animal Habt	Mile	0.352	0.316	0.318	0.275	–	-	–	-
	16. Protected Terrestrial Animal Habt	Acre	883	845	845	753	59	0	490	161
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	164	164	164	10	103	0	0
	21. Backcountry Management	Acre	247	126	126	126	3	26	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	249	5,817	204	136
Timber Management Efficiency	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							806	14,279	2,505	13,747

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ALTERNATIVE FUTURE II -- 0 Percent Return Flow Reduction

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative			ALTERNATIVE FUTURE Thousands - Noncumulative			DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative		
			1985	2000	2020	1985	2000	2020	1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	487	569	598	-196	-227	-312
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	327	338	0	-141	-237
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	309	416	449	-169	-174	-306
11. Increased Irrigation Efficiency	Acres	11	93	90	78	93	90	78	0	0	0
12. North Platte Decree Irrigation	Acres	12	49	49	43	49	49	43	0	0	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	204	198	184	0	0	0
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	47,277	58,010	73,334	0	0	0
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	57,755	62,936	67,059	0	0	0
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	104	102	96	0	0	0
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	182	181	163	0	0	0
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,051	5,102	5,886	0	0	0
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,433	0	0	0
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	76	78	102	0	0	0
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,465	2,442	3,281	0	0	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protected Aquatic Animal Habitat	Miles	36	316	318	275	316	318	275	0	0	0
37. Protected Terrestrial Animal Habitat	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	+479	+101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

* Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE II 50 Percent Return Flow Reduction

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future II responds to the question of zero discharge of irrigation return flows. The Basin's agricultural production is not to exceed its share of national demand for food and fiber. Several points along a curve show the cost of meeting 100 percent return flow reduction. This table shows the effect of 50 percent return flow reduction.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985	2000	2020 (Non-Cumulative)	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	52	51	47	-	-	-	-
	2. Acres with Return Flows	Acre	243	245	231	219	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	5,833	5,772	6,658	-	-	-	-
	4. Conservatn Land Treatmt [1/]	Acre	1,199	1,073	1,120	953	264	458	755	1,363
	5. Proper Land Use Change	Acre	0	386	363	363	20	160	258	469
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	93	78	76	130	1,029	435	7,865
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	169	170	166	52	446	132	3,213
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	100	100	100	53	420	178	3,214
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,441	3	31	23	38
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	0	0	0	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,060	4,966	5,885	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protected Aquatic Animal Habitat	Mile	0.352	0,320	0.326	0.243	-	-	-	-
	16. Protected Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	10	115	0	0
	21. Backcountry Management	Acre	247	126	126	126	3	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	125
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							865	14,716	2,697	17,032

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of Alternative Future II-- 50 Percent Return Flow Reduction

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	478	381	594	-205	-415	-316
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	339	328	0	-129	-247
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	332	444	483	-146	-146	-272
11. Increased Irrigation Efficiency	Acres	11	93	90	78	93	78	76	0	-12	-2
12. North Platte Decree Irrigation	Acres	12	49	49	43	43	44	43	-6	-5	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	202	188	186	-2	-10	2
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	46,858	57,711	73,046	-419	-299	-288
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	58,357	62,669	67,952	602	-267	893
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	52	51	47	-52	-51	-49
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	245	231	219	63	50	56
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,060	4,966	5,885	9	-136	-1
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,411	0	0	-22
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	76	75	101	0	-1	-1
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,465	2,445	3,281	0	0	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protected Aquatic Animal Habitat	Miles	36	316	318	275	320	326	243	4	8	-32
37. Protected Terrestrial Animal Habitat	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

* Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE II 75 Percent Return Flow Reduction

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future II responds to the question of zero discharge of irrigation return flows. The Basin's agricultural production is not to exceed its share of national demand for food and fiber. Several points along a curve show the cost of meeting 100 percent return flow reduction. This table shows the effect of 75 percent return flow reduction.

Platte Basin Concerns	Specific Study Objectives / Unit of Measure	Unit 1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000: USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	26	25	23	-	-	-	-
	2. Acres with Return Flows	Acre	243	213	198	201	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	5,854	5,747	6,646	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	950	1,081	924	249	433	715	1,288
	5. Proper Land Use Change	Acre	0	359	340	353	18	147	237	431
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	64	48	49	90	708	300	5,412
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	167	145	151	48	412	122	2,972
Flood Protection	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge	9. Zero Discharge Systems	Acre	62	127	127	127	91	719	304	5,497
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,444	3	31	23	38
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,064	4,960	5,868	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.320	0.327	0.276	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	164	164	164	10	103	0	0
	21. Backcountry Management	Acre	247	126	126	126	3	26	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	249	5,817	204	136
Timber Management Efficiency	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							839	14,625	2,611	16,519

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ALTERNATIVE FUTURE II -- 75 Percent Return Flow Reduction

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	393	458	541	-290	-338	-369
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	389	326	0	-79	-249
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	461	432	493	-17	-158	-262
11. Increased Irrigation Efficiency	Acres	11	93	90	78	64	48	49	-29	-42	-29
12. North Platte Decree Irrigation	Acres	12	49	49	43	28	21	29	-21	-28	-14
13. Irrigation Outside Decree Area	Acres	13	204	198	184	184	177	171	-20	-21	-13
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	45,576	56,033	70,713	-1,701	-2,027	-2,621
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	59,045	60,561	67,641	1,290	-2,375	582
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	26	25	23	-78	-77	-73
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	213	198	201	31	17	38
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,064	4,960	5,873	13	-142	-13
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,444	0	0	11
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	76	75	101	0	-3	-1
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	0	0	0	-39	-39	-39
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,465	2,445	3,383	0	3	102
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protected Aquatic Animal Species	Miles	36	316	318	275	320	327	276	4	9	1
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

* Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE II 100 Percent Return Flow Reduction

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future II responds to the question of zero discharge of irrigation return flows. The Basin's agricultural production is not to exceed its share of national demand for food and fiber. Several points along a curve show the cost of meeting 100 percent return flow reduction. This table shows the effect of 100 percent return flow reduction.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	0	0	0	-	-	-	-
	2. Acres with Return Flows	Acre	243	0	0	0	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	5,812	5,738	6,633	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	880	1,029	891	239	417	687	1,239
	5. Proper Land Use Change	Acre	0	318	332	346	17	136	219	398
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	13	16	16	22	177	75	1,353
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	122	117	132	-	-	-	-
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	138	142	163	112	885	374	6,766
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,448	3	31	23	38
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,128	5,101	5,874	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.316	0.318	0.276	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	10	103	0	0
	21. Backcountry Management	Acre	247	126	126	126	3	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	0	0	0	0
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							736	13,816	2,294	10,665

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ALTERNATIVE FUTURE II -- 100 Percent Return Flow Reduction

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot Note *	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	256	356	435	-427	-440	-475
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	425	393	0	-43	-182
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	472	403	442	-6	-187	-313
11. Increased Irrigation Efficiency	Acres	11	93	90	78	13	16	16	-80	-74	-62
12. North Platte Decree Irrigation	Acres	12	49	49	43	0	0	0	-49	-49	-43
13. Irrigation Outside Decree Area	Acres	13	204	198	184	138	142	153	-66	-56	-31
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	42,425	51,573	66,195	-4,852	-6,437	-7,139
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	54,969	59,163	67,327	-2,786	-3,773	268
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	0	0	0	-104	-102	-96
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	0	0	0	-182	-181	-163
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,128	5,101	5,874	77	-1	-12
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,448	0	0	15
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	76	75	101	0	-1	-1
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,465	2,445	3,281	0	3	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	316	318	276	0	0	1
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present, 1975				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present, 1975				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

* Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

N A T I O N A L   E C O N O M I C   D E V E L O P M E N T   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. II 0% Return Flow Reduction	Alt. Fut. II 50% Return Flow Reduction	Alt. Fut. II 75% Return Flow Reduction	Alt. Fut. II 100% Return Flow Reduction
1. Agricultural Crop Sales	$	1985	114,104	114,104	114,364	113,691	105,937
2. Livestock Sales	$	1985	80,852	80,852	80,975	80,934	80,414
3. Forestry Sector Sales	$	1985	11,019	11,019	11,193	11,334	11,374
4. Service Sector Sales	$	1985	41,462	41,462	42,104	42,511	42,022
5. Total of Private Sales(1)	$	1985	336,883	336,883	351,109	361,425	353,721
6. Agriculture - Private (2)	$	1985	47,277	47,277	46,858	45,576	42,425
Net Revenue	$	2000	58,060	58,010	57,711	56,033	51,573
	$	2020	73,334	73,334	73,046	70,713	66,195
7. Agriculture - Private (2)	$	1985	57,755	57,755	58,357	59,045	54,969
Production Cost	$	2000	62,936	62,936	62,669	60,561	59,163
	$	2020	67,059	67,059	67,952	67,641	67,327
8. Water Devel. Projects	$	1978	(3)	0	0	0	0
Public Cost	($)	1978	(3)	0	0	0	0
Private Cost	($)	1978	(3)	0	0	0	0
9. Forestry Development	$	1975	(3)	-5,175	-5,175	-5,175	-5,175
Public Pres Worth	$	1975	(3)	-6,804	-6,804	-6,804	-6,804
Pvt Nt Pres Worth	$	1975	(3)	1,629	1,629	1,629	1,629
10. Increased	Ac	1985	93	93	93	64	13
Irrigation	Ac	2000	90	90	78	48	16
Efficiency	Ac	2020	78	78	76	49	16
11. Full Water	Ac	1985	171	171	169	167	122
Supply	Ac	2000	164	164	170	145	117
Irrigated	Ac	2020	162	162	166	151	132
12. Land Use Change	Ac	1985	367	367	376	351	318
Rangeland to	Ac	2000	358	358	348	333	330
Dry Cropland	Ac	2020	358	358	342	340	340
13. Land Use Change	Ac	1985	6	6	0	0	0
Rangeland to	Ac	2000	0	0	0	0	0
Irrigated Croplnd	Ac	2020	1	1	9	8	4
14. Land Use Change	Ac	1985	6	6	10	8	0
Dry Cropland to	Ac	2000	17	17	15	7	2
Irrigated Croplnd	Ac	2020	20	20	12	5	2
15. Rangeland with	Ac	1985	38	38	38	38	38
Treatment	Ac	2000	38	38	38	38	38
	Ac	2020	3,433	3,433	3,441	3,444	3,448
16. Municipal and	AF	1985	18	18	18	18	18
Industrial Water	AF	2000	18	18	18	18	18
	AF	2020	18	18	18	18	18
17. Agricultural	Ac	1985	91	91	91	91	91
Flooding	Ac	2000	91	91	91	91	91
	Ac	2020	91	91	91	91	91
18. Livestock	AUM	1985	2,581	2,581	2,581	2,581	2,581
	AUM	2000	2,560	2,560	2,560	2,560	2,560
	AUM	2020	3,423	3,423	3,423	3,423	3,423
19. Zero Discharge	Ac	1985	62	70	100	127	138
Systems	Ac	2000	62	66	97	114	142
	Ac	2020	62	64	97	126	163
20. Wldrns-Backcntry Expr	RD	2020	124	51	51	51	51
21. Fishing	RD	1985	1,674	2,127	2,127	2,127	2,127
	RD	2000	2,269	2,127	2,127	2,127	2,127
	RD	2020	3,486	2,127	2,127	2,127	2,127
22. Big Game	RD	1985	219	195	195	195	195
Hunting	RD	2000	315	195	195	195	195
	RD	2020	517	195	195	195	195
23. Small Game and	RD	1985	137	84	84	84	84
Bird Hunting	RD	2000	206	84	84	84	84
	RD	2020	374	84	84	84	84
24. Boating	RD	1985	1,115	1,115	1,115	1,115	1,115
Swimming	RD	2000	1,273	1,273	1,273	1,273	1,273
Water Skiing	RD	2020	1,514	1,514	1,514	1,514	1,514
25. Total Timber Harvest	MBF	1975	15,530	21.760	21,760	21,760	21,760
26. Annual	MBF	1985	47	47	47	47	47
Timber	MBF	2000	54	54	54	54	54
Harvest	MBF	2020	59	59	59	59	59
27. Thinning and	Acres	1985	14.6	6.9	6.9	6.9	6.9
Planting	Acres	2000	28.0	81.9	81.9	81.9	81.9
Accumulated	Acres	2020	44.2	118.2	118.2	118.2	118.2

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.

(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Output from LP were used as inputs to the I-O.

(3). Information not available.

E N V I R O N M E N T A L   Q U A L I T Y   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. II 0% Return Flow Reduction	Alt. Fut. II 50% Return Flow Reduction	Alt. Fut. II 75% Return Flow Reduction	Alt. Fut. II 100% Return Flow Reduction
Areas of Consideration							
1. Rivers and Streams	Mi	2020	4.4	4.4	4.4	4.4	4.4
2. Lakes and Reservoirs	Ac	2020	71.6	71.6	71.6	71.6	71.6
3. Protected Aquatic	Mi	1985	316	316	320	320	316
Animal Habitat	Mi	2000	318	318	326	327	318
	Mi	2020	275	275	243	276	276
4. Protected Terrestrial	Ac	1985	845	845	845	845	845
Animal Habitat	Ac	2000	845	845	845	845	845
	Ac	2020	753	753	753	753	753
5. Critical	Ac	1985	552	552	552	552	552
Big Game	Ac	2000	552	552	552	552	552
Habitat	Ac	2020	460	460	460	460	460
6. Critical	AUM	1985	33	33	33	33	33
Big Game	AUM	2000	33	33	33	33	33
Use	AUM	2020	33	33	33	33	33
7. Wilderness Class	Ac	2020	290	164	164	164	164
8. Backcountry Mgt	Ac	2020	(1)	126	126	126	126
Water, Air, Land Quality							
9. Non - Point Source	AcFt	1985	104	104	52	26	0
Pollutn-Irrigtn	AcFt	2000	102	102	51	25	0
Return Flows	AcFt.	2020		96	47	23	0
10. Non - Point Source	Ac	1985	182	182	245	213	0
Polutn - Acres	Ac	2000	181	181	231	198	0
With Flows	Ac	2020	163	163	219	201	0
11. Water Erosion	Ton	1985	5,831	5,831	5,833	5,854	5,812
Annual Total	Ton	2000	5,803	5,803	5,772	5,747	5,738
	Ton	2020	6,665	6,665	6,658	6,646	6,633
12. Water Erosion	Ac	1985	5,051	5,051	5,060	5,064	5,128
Over 0.5 t/a/yr	Ac	2000	5,102	5,102	4,966	4,960	5,101
	Ac	2020	5,886	5,886	5,885	5,873	5,874
13. Land Treatment	Ac	1985	607	607	608	601	598
Minimum	Ac	2000	604	604	603	604	609
Tillage	Ac	2020	606	606	603	604	609
14. Land Treatment	Ac	1985	122	122	120	100	128
Wind	Ac	2000	110	110	114	117	116
Strip	Ac	2020	113	113	116	116	115
15. Land Treatment	Ac	1985	209	209	208	163	154
Contour	Ac	2000	285	285	280	276	277
Farming	Ac	2020	105	105	109	109	111
16. Land Treatment	Ac	1985	144	144	137	86	0
Permanent	Ac	2000	143	143	123	84	27
Cover	Ac	2020	125	125	125	95	56
17. Agric Land Quality	Indx	1985	1.25	1.25	1.24	1.23	1.24
Antelope Habitat	Indx	2020	1.36	1.36	1.37	1.37	1.37
18. Agric Land Quality	Indx	1985	1.32	1.32	1.32	1.32	1.32
Deer Habitat	Indx	2020	1.51	1.51	1.51	1.51	1.52
19. Agric Land Quality	Indx	1985	1.57	1.57	1.61	1.63	1.62
Elk Habitat	Indx	2020	1.95	1.95	1.95	1.95	1.95
20. Agric Land Quality	Indx	1985	1.34	1.34	1.34	1.34	1.34
Grouse Habitat	Indx	2020	1.49	1.49	1.49	1.49	1.49
21. Forestland Quality	Indx	1985	0.92	0.92	0.92	0.92	0.92
Air Quality	Indx	2020	0.89	0.89	0.89	0.89	0.89
22. Forestland Quality	Indx	1985	0.86	0.86	0.86	0.86	0.86
Water Quality	Indx	2020	0.86	0.86	0.86	0.86	0.86
23. Forestland Quality	Indx	1985	0.88	0.88	0.88	0.88	0.88
Wildlife Quality	Indx	2020	0.87	0.87	0.87	0.87	0.87
24. Forestland Quality	Indx	1985	0.98	0.98	0.98	0.98	0.98
Development & Use	Indx	2020	0.96	0.96	0.96	0.96	0.96
Irreversible Commitments							
25. Petroleum Fuel Use	Gal	1985	(1)	21277	21267	20979	20092
Annual Total	Gal	2000	(1)	23494	22319	22871	22177
Rec Ag For	Gal	2020	(1)	25362	25491	25062	24334
26. Prime Cropland Lost							
To Project	Ac	2020	(1)	(1)	(1)	(1)	(1)
To Attrition	Ac	2020	(1)	(1)	(1)	(1)	(1)
27. Prime Forestland Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
28. Crit Wildlf Area Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
29. Rivers & Streams Lost							
To Project	Mi	2020	(1)	0	0	0	0
To Attrition	Mi	2020	(1)				
30. Historic/Archeol Lost	Site	2020	(1)	0	0	0	0

(1) Information not available.

R E G I O N A L   D E V E L O P M E N T   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut II 0% Return Flow Reduction	Alt. Fut. II 50% Return Flow Reduction	Alt. Fut. II 75% Return Flow Reduction	Alt. Fut. II 100% Return Flow Reduction
Income Effects							
1. Household Income	$	1985	164,727	164,727	169,554	172,853	168,448
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
2. Gov't Expenditures	$	1985	387,079	387,079	403,425	415,278	406,427
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
Number of Jobs							
3. Agricultural Crops	No.	1985	3.3	3.3	3.3	3.3	3.1
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
4. Livestock Industry	No.	1985	2.1	2.1	2.1	2.1	2.1
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
5. Forestry Indusry	No.	1985	0.4	0.4	0.4	0.4	0.4
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
6. All Other Sectors	No.	1985	6.9	6.9	7.5	8.0	8.0
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
7. Project Generatd Jobs	No.	1979	(1)	(1)	(1)	(1)	(1)
Type of Jobs							
8. Professional & Techn	No.	1985	0.7	0.7	0.7	0.8	0.8
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020					
9. Managerial & Admin	No.	1985	4.4	4.4	4.5	4.5	4.4
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
10. Sales and Clerical	No.	1985	1.5	1.5	1.6	1.6	1.6
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
11. Craftmen Foremen Mec	No.	1985	1.2	1.2	1.4	1.6	1.7
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
12. Equipment Operators	No.	1985	0.9	0.9	1.0	1.0	1.0
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
13. Service Workers	No.	1985	1.6	1.6	1.6	1.7	1.6
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
14. Non-Farm Labor	No.	1985	0.7	0.7	0.8	0.9	0.9
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
15. Farm Labor & Foremen	No.	1985	1.7	1.7	1.7	1.7	1.6
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Population Effect							
16. Agricultural Crop	No.	1985	10.8	10.8	10.8	10.7	10.0
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
17. Livestock Industry	No.	1985	6.9	6.9	6.9	6.8	6.8
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
18. Forestry Industry	No.	1985	1.3	1.3	1.3	1.3	1.3
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
19. All Other Sectors	No.	1985	22.3	22.3	24.2	25.8	26.0
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)

(1) Information not available.

S O C I A L   W E L L - B E I N G   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. II 0% Return Flow Reduction	Alt. Fut. II 50% Return Flow Reduction	Alt. Fut. II 75% Return Flow Reduction	Alt. Fut. II 100% Return Flow Reduction
Household Income By Sectors							
1. Agricultural Crops	$	1985	62,140	54,022	54,151	53,842	50,213
Income	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
2. Livestock Industry	$	1985	39,375	38,816	38,827	38,807	38,558
Income	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
3. Forestry Industry	$	1985	3,198	3,199	3,250	3,291	3,302
Income	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
4. Construction Industry	$	1985	5,333	5,552	7,566	9,212	9,759
Income	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
5. Auto Dealers and	$	1985	2,055	2,080	2,105	2,125	2,110
Gas Stations	$	2000	(1)	(1)	(1)	(1)	(1)
Income	$	2020	(1)	(1)	(1)	(1)	(1)
6. Eating & Drinking &	$	1985	4,069	4,216	4,224	4,129	4,127
Lodging Places	$	2000	(1)	(1)	(1)	(1)	(1)
Income	$	2020	(1)	(1)	(1)	(1)	(1)
7. Other Retail Persons,	$	1985	6,301	6,529	6,404	6,539	6,489
Repair Services	$	2000	(1)	(1)	(1)	(1)	(1)
Income	$	2020	(1)	(1)	(1)	(1)	(1)
8. Governmental	$	1985	27,653	26,437	27,685	28,627	28,286
Services	$	2000	(1)	(1)	(1)	(1)	(1)
Income	$	2020	(1)	(1)	(1)	(1)	(1)
9. All Other Sectors	$	1985	26,297	23,876	25,342	26,283	25,604
	$	2000	(1)	(1)	(1)	(10	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
Minority & Women Employmt							
10. Professional, Techn,	No.	1985	0.537	0.525	0.541	0.554	0.550
Admin, & Managerial	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
11. Sales People and	No.	1985	1.166	1.142	1.183	1.214	1.206
Clerical Help	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
12. Craftsmen, Foremen	No.	1985	0.094	0.093	0.108	0.120	0.123
& Mechanics	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
13. Equipment Operators	No.	1985	0.204	0.203	0.214	0.222	0.222
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
14. Service Workers	No.	1985	1.403	1.418	1.426	1.434	1.430
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
15. Non-Farm Laborers	No.	1985	0.087	0.084	0.090	0.094	0.094
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
16. Farm Labor and	No.	1985	0.315	0.291	0.292	0.290	0.280
Foremen	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Life, Health, and Safety							
17. No Fld Protectn Agric	Ac	1979	(1)	(1)	(1)	(1)	(1)
18. No Fld Protectn Urban	Ac	1979	(1)	(1)	(1)	(1)	(1)
Loss of Future Options							
19. Crop Futures Foregone	Indx	1985	(1)	1.097	1.097	1.097	1.097
20. Water Use F Foregone	Indx	1985	(1)	0.020	0.163	0.835	49.399
21. Range & Wldlf F Fgone	Indx	1985	(1)	0.228	0.214	0.214	0.228
22. Fishg & Huntg F Fgone	Indx	1985	(1)	0.000	0.000	0.000	0.000
23. Recreatn F Foregone	Indx	1985	(1)	0.960	0.960	0.960	0.960
24. Timber Harvst F Fgone	Indx	1985	(1)	0.000	0.000	0.000	0.000
25. 1985 Futures Foregone	Indx	1985	(1)	2.305	2.434	3.105	51.683
26. 2000 Futures Foregone	Indx	2000	(1)	2.455	2.570	3.876	51.794
27. 2020 Futures Foregone	Indx	2020	(1)	3.804	4.231	4.710	8.119
Reserve Productn Capacity							
28. Agriculturl Cropland	Ac	2020	(1)	970	965	991	1,021
29. Livestock Production	AUM	2020	(1)	270	274	277	278
30. Timber Production	MBF	2020	(1)	53	53	53	53
31. Ground Water Reservoir	AF	2020	(1)	57	57	57	69

(1) Information not available.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE III

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future III responds to the question of competition for developed water supplies. The amounts of water to be transferred from agricultural use to other use were prorated to all of the watersheds above the diversion points. The Basin's agricultural production is not to exceed its share of national demand for food and fiber.

Platte Basin Concerns	Specific Study Objectives: Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative): 1985	2000	2020	Necessary Commitments to 2000: USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	102	100	94	-	-	-	-
	2. Acres with Return Flows	Acre	243	182	242	162	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	5,832	5,804	6,662	-	-	-	-
	4. Conservatn Land Treatmt[1/]	Acre	1,199	1,081	1,140	946	267	463	764	1,376
	5. Proper Land Use Change	Acre	0	384	376	381	20	160	257	468
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	92	88	76	129	1,018	431	7,780
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	170	162	161	52	446	132	3,213
Flood Protection	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge	9. Zero Discharge Systems	Acre	62	70	70	70	11	88	37	677
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,431	3	31	23	38
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,059	5,122	5,888	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.320	0.316	0.275	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							826	14,378	2,560	14,423

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE III

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot Note*	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	486	567	597	-197	-229	-313
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	327	340	0	-141	-235
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	306	414	444	-172	-176	-311
11. Increased Irrigation Efficiency	Acres	11	93	90	78	92	88	76	-1	-2	-2
12. North Platte Decree Irrigation	Acres	12	49	49	43	49	48	43	0	-1	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	203	196	183	-1	-2	-1
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	47,219	57,915	73,221	-58	-95	-113
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	57,694	62,785	66,958	-61	-151	-101
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	40.5	55.5	55.5	22.5	37.5	37.5
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	102	100	94	-2	-2	-2
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	182	244	162	0	63	-1
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,059	5,122	5,888	8	20	2
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	75.2	75.8	75.8	3.6	4.2	4.2
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,431	0	0	-2
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	76	76	102	0	0	0
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	30	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,465	2,444	3,281	0	2	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	320	316	275	4	-2	0
37. Protected Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	75	76	76	3	4	4
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present, 1975				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present, 1975				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

NATIONAL ECONOMIC DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alternative Future III
1. Agricultural Crop Sales	$	1985	114,104	113,943
2. Livestock Sales	$	1985	80,852	80,942
3. Forestry Sector Sales	$	1985	11,019	11,022
4. Service Sector Sales	$	1985	41,462	41,457
5. Total of Private Sales (1)	$	1985	336,883	336,856
6. Agriculture - Private (2)	$	1985	47,277	47,219
Net Revenue	$	2000	58,060	57,915
	$	2020	73,334	73,221
7. Agriculture - Private (2)	$	1985	57,755	57,694
Production Cost	$	2000	62,936	62,785
	$	2020	67,059	66,958
8. Water Devel. Projects	$	1978	(3)	0
Public Cost	($)	1978	(3)	0
Private Cost	($)	1978	(3)	0
9. Forestry Development	$	1975	(3)	-5,175
Public Pres Worth	$	1975	(3)	-6,804
Pvt Nt Pres Worth	$	1975	(3)	+1,629
10. Increased	Ac	1985	93	92
Irrigation	Ac	2000	90	88
Efficiency	Ac	2020	78	76
11. Full Water	Ac	1985	171	170
Supply	Ac	2000	164	162
Irrigated	Ac	2020	162	161
12. Land Use Change	Ac	1985	367	373
Rangeland to	Ac	2000	358	359
Dry Cropland	Ac	2020	358	360
13. Land Use Change	Ac	1985	6	0
Rangeland to	Ac	2000	0	0
Irrigated Croplnd	Ac	2020	1	0.5
14. Land Use Change	Ac	1985	6	11
Dry Cropland to	Ac	2000	17	17
Irrigated Croplnd	Ac	2020	20	21
15. Rangeland with	Ac	1985	38	38
Treatment	Ac	2000	38	38
	Ac	2020	3,433	3,431
16. Municipal and	AF	1985	18	40.5
Industrial Water	AF	2000	18	55.5
	AF	2020	18	55.5
17. Agricultural	Ac	1985	91	91
Flooding	Ac	2000	91	91
	Ac	2020	91	91
18. Livestock	AUM	1985	2,581	2,581
	AUM	2000	2,560	2,560
	AUM	2020	3,423	3,423
19. Zero Discharge	Ac	1985	62	70
Systems	Ac	2000	62	66
	Ac	2020	62	64
20. Wldrns-Backcntry Expr	RD	2020	124	51
21. Fishing	RD	1985	1,674	2,217
	RD	2000	2,269	2,217
	RD	2020	3,486	2,217
22. Big Game	RD	1985	219	195
Hunting	RD	2000	315	195
	RD	2020	517	195
23. Small Game and	RD	1985	137	84
Bird Hunting	RD	2000	206	84
	RD	2020	374	84
24. Boating	RD	1985	1,115	1,115
Swimming	RD	2000	1,273	1,273
Water Skiing	RD	2020	1,514	1,514
25. Total Timber Harvest	MBF	1975	15,530	21,670
26. Annual	MBF	1985	47	47
Timber	MBF	2000	54	54
Harvest	MBF	2020	59	59
27. Thinning and	Acres	1985	14.6	6.9
Planting	Acres	2000	28.0	81.9
Accumulated	Acres	2020	44.2	118.2

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.
(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Output from the LP were used as inputs to the I-O.
(3). Information not available.

E N V I R O N M E N T A L   Q U A L I T Y   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alternative Future III			
Areas of Consideration							
1. Rivers and Streams	Mi	2020	4.4	4.4			
2. Lakes and Reservoirs	Ac	2020	71.6	75.8			
3. Protected Aquatic	Mi	1985	316	320			
Animal	Mi	2000	318	316			
Habitat	Mi	2020	275	275			
4. Protected Terrestrial	Ac	1985	845	845			
Animal	Ac	2000	845	845			
Habitat	Ac	2020	753	753			
5. Critical	Ac	1985	552	552			
Big Game	Ac	2000	552	552			
Habitat	Ac	2020	460	460			
6. Critical	AUM	1985	33	33			
Big Game	AUM	2000	33	33			
Use	AUM	2020	33	33			
7. Wilderness Class	Ac	2020	290	164			
8. Backcountry Mgt	Ac	2020		126			
Water, Air, Land Quality							
9. Non - Point Source	AcFt	1985	104	102			
Pollutn-Irrigtn	AcFt	2000	102	100			
Return Flows	AcFt.	2020	(1)	94			
10. Non - Point Source	Ac	1985	182	182			
Polutn - Acres	Ac	2000	181	244			
With Flows	Ac	2020	163	162			
11. Water Erosion	Ton	1985	5,831	5,832			
Annual Total	Ton	2000	5,803	5,804			
	Ton	2020	6,665	6,662			
12. Water Erosion	Ac	1985	5,051	5,059			
Over 0.5 t/a/yr	Ac	2000	5,102	5,122			
	Ac	2020	5,886	5,888			
13. Land Treatment	Ac	1985	607	607			
Minimum	Ac	2000	604	605			
Tillage	Ac	2020	606	606			
14. Land Treatment	Ac	1985	122	122			
Wind	Ac	2000	110	109			
Strip	Ac	2020	113	112			
15. Land Treatment	Ac	1985	209	209			
Contour	Ac	2000	285	285			
Farming	Ac	2020	105	104			
16. Land Treatment	Ac	1985	144	143			
Permanent	Ac	2000	143	141			
Cover	Ac	2020	125	124			
17. Agric Land Quality	Indx	1985	1.25	1.25			
Antelope Habitat	Indx	2020	1.36	1.36			
18. Agric Land Quality	Indx	1985	1.32	1.32			
Deer Habitat	Indx	2020	1.51	1.51			
19. Agric Land Quality	Indx	1985	1.57	1.57			
Elk Habitat	Indx	2020	1.95	1.95			
20. Agric Land Quality	Indx	1985	1.34	1.34			
Grouse Habitat	Indx	2020	1.49	1.49			
21. Forestland Quality	Indx	1985	0.92	0.92			
Air Quality	Indx	2020	0.89	0.89			
22. Forestland Quality	Indx	1985	0.86	0.86			
Water Quality	Indx	2020	0.86	0.86			
23. Forestland Quality	Indx	1985	0.88	0.88			
Wildlife Quality	Indx	2020	0.87	0.87			
24. Forestland Quality	Indx	1985	0.98	0.98			
Development & Use	Indx	2020	0.96	0.96			
Irreversible Commitments							
25. Petroleum Fuel Use	Gal	1985	(1)	21264			
Annual Total	Gal	2000	(1)	23476			
Rec Ag For	Gal	2020	(1)	25347			
26. Prime Cropland Lost							
To Project	Ac	2020	(1)	(1)			
To Attrition	Ac	2020	(1)	(1)			
27. Prime Forestland Lost	Ac	2020	(1)	(1)			
28. Crit Wildlf Area Lost	Ac	2020	(1)	(1)			
29. Rivers & Streams Lost							
To Project	Mi	2020	(1)	0			
To Attrition	Mi	2020	(1)	(1)			
30. Historic/Archeol Lost	Site	2020	(1)	0			

(1). Information not available.

REGIONAL DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alternative Future III				
Income Effects								
1. Household Income	$	1985	164,727	164,680				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
2. Gov't Expenditures	$	1985	387,079	387,049				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
Number of Jobs								
3. Agricultural Crops	No.	1985	3.3	3.3				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
4. Livestock Industry	No.	1985	2.1	2.1				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
5. Forestry Indusry	No.	1985	0.4	0.4				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
6. All Other Sectors	No.	1985	6.9	6.9				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
7. Project Generatd Jobs	No.	1979	(1)	(1)				
Type of Jobs								
8. Professional & Techn	No.	1985	0.7	0.7				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
9. Managerial & Admin	No.	1985	4.4	4.4				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
10. Sales and Clerical	No.	1985	1.5	1.5				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
11. Craftmen Foremen Mec	No.	1985	1.2	1.2				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
12. Equipment Operators	No.	1985	0.9	0.9				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
13. Service Workers	No.	1985	1.6	1.6				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
14. Non-Farm Labor	No.	1985	0.7	0.7				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
15. Farm Labor & Foremen	No.	1985	1.7	1.7				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Population Effect								
16. Agricultural Crop	No.	1985	10.8	10.8				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
17. Livestock Industry	No.	1985	6.9	6.8				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
18. Forestry Industry	No.	1985	1.3	1.3				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
19. All Other Sectors	No.	1985	22.3	22.4				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				

(1). Information not available.

SOCIAL WELL-BEING ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alternative Future III				
Household Income By Sectors								
1. Agricultural Crops Income	$	1985	62,140	53,947				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
2. Livestock Industry Income	$	1985	39,375	38,811				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
3. Forestry Industry Income	$	1985	3,198	3,200				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
4. Construction Industry Income	$	1985	5,333	5,583				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
5. Auto Dealers and Gas Stations Income	$	1985	2,055	2,080				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
6. Eating & Drinking & Lodging Places Income	$	1985	4,069	4,116				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
7. Other Retail Persons, Repair Services Income	$	1985	6,301	6,230				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
8. Governmental Services Income	$	1985	27,653	26,441				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
9. All Other Sectors	$	1985	26,297	24,272				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
Minority & Women Employmt								
10. Professional, Techn, Admin, & Managerial	No.	1985	0.537	0.525				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
11. Sales People and Clerical Help	No.	1985	1.166	1.142				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
12. Craftsmen, Foremen & Mechanics	No.	1985	0.094	0.093				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
13. Equipment Operators	No.	1985	0.204	0.203				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
14. Service Workers	No.	1985	1.403	1.418				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
15. Non-Farm Laborers	No.	1985	0.087	0.084				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
16. Farm Labor and Foremen	No.	1985	0.315	0.291				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Life, Health, and Safety								
17. No Fld Protectn Agric	Ac	1979	(1)	(1)				
18. No Fld Protectn Urban	Ac	1979	(1)	(1)				
Loss of Future Options								
19. Crop Futures Foregone	Indx	1985	(1)	1.097				
20. Water Use F Foregone	Indx	1985	(1)	0.020				
21. Range & Wldlf F Fgone	Indx	1985	(1)	0.214				
22. Fishg & Huntg F Fgone	Indx	1985	(1)	0.000				
23. Recreatn F Foregone	Indx	1985	(1)	0.960				
24. Timber Harvst F Fgone	Indx	1985	(1)	0.000				
25. 1985 Futures Foregone	Indx	1985	(1)	2.291				
26. 2000 Futures Foregone	Indx	2000	(1)	2.483				
27. 2020 Futures Foregone	Indx	2020	(1)	4.080				
Reserve Productn Capacity								
28. Agriculturl Cropland	Ac	2020	(1)	972				
29. Livestock Production	AUM	2020	(1)	261				
30. Timber Production	MBF	2020	(1)	53				
31. Ground Water Reservoir	AF	2020	(1)	57				

(1). Information not available.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE IV 0 Percent Return Flow Reduction

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future IV responds to the zero discharge of irrigation return flows question as does Alternative Future II. The difference is that agricultural production is not limited to the Basin's share of national demand for food and fiber. This table shows the effect of the 0 percent return flow reduction.

Platte Basin Concerns	Specific Study Objectives — Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000 — USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	55	49	49	-	-	-	-
	2. Acres with Return Flows	Acre	243	260	251	251	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	6,953	7,241	7,112	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	6,472	4,522	3,022	1,511	2,629	4,337	7,821
	5. Proper Land Use Change	Acre	0	2,536	2,620	1,524	132	1,078	1,736	3,156
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	84	76	77	118	929	393	7,104
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	213	212	210	109	925	274	6,667
Flood Protection	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge	9. Zero Discharge Systems	Acre	62	178	178	179	162	1,283	543	9,810
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	5,537	5,583	6,690	502	4,522	3,406	5,639
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	290	290	290	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,474	6,543	6,484	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.250	0.246	0.250	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	593	593	581	42	0	344	113
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	125
Timber Management Efficiency	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							2,861	23,538	11,459	41,019

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE IV -- 0 Percent Return Flow Reduction
Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,789	4,557	3,338	3,500	4,207	2,927
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	120	127	145	-563	-699	-765
3. Barley	Bushels	3	618	643	621	10,230	12,690	11,140	9,612	12,047	10,519
4. Dry Beans	Cwt.	4	234	152	96	825	962	1,096	591	810	1,000
5. Corn	Bushels	5	2,332	3,289	3,932	249	309	633	-2,083	-2,980	-3,299
6. Corn Silage	Tons	6	371	468	575	742	817	896	371	349	321
7. Oats	Bushels	7	1,300	1,654	2,000	14,914	16,818	12,669	13,614	15,164	10,669
8. Potatoes	Cwt.	8	570	657	735	4,813	6,883	9,172	4,243	6,226	8,437
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	788	941	1,049	310	351	294
11. Increased Irrigation Efficiency	Acres	11	93	90	78	84	76	77	-9	-14	-1
12. North Platte Decree Irrigation	Acres	12	49	49	43	42	41	41	-7	-8	-2
13. Irrigation Outside Decree Area	Acres	13	204	198	184	218	210	210	14	12	26
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	99,278	144,460	163,480	52,001	86,450	90,146
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	229,550	248,380	191,600	171,795	185,444	124,541
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	55	49	49	-49	-53	-47
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	260	251	251	78	70	88
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,479	6,543	6,484	1,428	1,441	598
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	901,100	1,069,700	905,000	691,100	784,700	570,000
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,537	5,583	6,690	5,499	5,545	3,257
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	290	290	302	252	252	172
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	95	95	115	19	19	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	250	246	250	-66	-72	-25
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	593	593	581	-252	-252	-172
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE IV 50 Percent Return Flow Reduction

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future IV responds to the zero discharge of irrigation return flows question as does Alternative Future II. The difference is that the agricultural production is not limited to the Basin's share of national demand for food and fiber. This table shows the effect of reducing irrigation return flows by 50 percent.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	27	25	24	-	-	-	-
	2. Acres with Return Flows	Acre	243	248	255	256	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	6,949	7,237	7,111	-	-	-	-
	4. Conservatn Land Treatmt [1/]	Acre	1,199	6,460	4,531	2,920	1,513	2,629	4,340	7,824
	5. Proper Land Use Change	Acre	0	2,535	2,620	1,524	132	1,077	1,736	3,155
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	77	81	82	113	896	379	6,850
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	214	214	212	109	936	277	6,747
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	185	194	203	185	1,460	618	11,163
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	5,537	5,583	6,690	502	4,522	3,406	5,639
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	290	290	302	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,562	6,645	6,614	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.247	0.244	0.245	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	593	593	581	42	0	344	113
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	125
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							2,880	23,692	11,526	42,200

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE IV - 50 Percent Return Flow Reduction

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot Note*	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,781	4,566	3,352	3,492	4,216	2,941
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	160	137	151	-523	-659	-759
3. Barley	Bushels	3	618	643	621	10,243	12,690	11,140	9,625	12,047	10,519
4. Dry Beans	Cwt.	4	234	152	96	825	962	1,096	591	810	1,000
5. Corn	Bushels	5	2,332	3,289	3,932	250	309	633	-2,082	-2,980	-3,299
6. Corn Silage	Tons	6	371	468	575	745	820	898	374	352	323
7. Oats	Bushels	7	1,300	1,654	2,000	14,474	16,412	12,479	13,174	14,758	10,479
8. Potatoes	Cwt.	8	570	657	735	4,813	6,883	9,173	4,243	6,226	8,438
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	788	941	1,050	310	351	295
11. Increased Irrigation Efficiency	Acres	11	93	90	78	77	81	82	-16	-9	4
12. North Platte Decree Irrigation	Acres	12	49	49	43	42	43	43	-7	-6	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	206	212	213	2	14	29
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	99,000	144,140	163,130	51,723	86,130	89,796
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	228,730	249,000	192,650	170,975	186,064	125,591
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	27	25	24	-77	-77	-72
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	248	255	256	66	74	93
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,562	6,645	6,614	1,511	1,543	728
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	889,000	1,057,900	899,400	679,000	773,900	564,400
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,036	5,583	6,690	4,998	5,548	3,257
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	290	290	302	252	252	172
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	95	95	115	19	19	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	247	244	245	-69	-74	-30
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	593	593	581	-252	-252	-172
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658 Costs and returns for 100-yrs. Discount to Present 1975.					
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993 Costs and returns for 100-yrs. Discount to Present 1975.					
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE IV 75 Percent Return Flow Reduction

Platte River Basin, Wyoming 1979

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future IV was structured to respond to the zero discharge of irrigation return flows question as was Alternative Future II. The difference is that the agricultural production is not limited to the Basin's share of national demand for food and fiber. This table shows the effect of reducing irrigation return flows by 75 percent.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	14	12	12	-	-	-	-
	2. Acres with Return Flows	Acre	243	241	248	248	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	6,947	7,237	7,109	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	6,456	4,529	2,917	1,512	2,631	4,340	7;824
	5. Proper Land Use Change	Acre	0	2,534	2,620	1,524	132	1,077	1,736	3,155
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	75	72	68	105	830	351	6,343
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	212	209	205	107	913	271	6,586
Flood Protection	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge	9. Zero Discharge Systems	Acre	62	197	209	213	206	1,626	688	12,432
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	5,537	5,583	6,690	502	4,522	3,406	5,639
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	287	287	302	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,544	6,544	6,484	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.248	0.248	0.250	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	596	596	581	42	0	344	113
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							2,891	23,771	11,562	42,802

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE IV -- 75 Percent Return Flow Reduction

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,789	4,581	3,374	3,500	4,231	2,963
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	100	115	119	-583	-681	-791
3. Barley	Bushels	3	618	643	621	10,243	12,690	11,140	9,625	12,047	10,519
4. Dry Beans	Cwt.	4	234	152	96	825	962	1,096	591	810	1,000
5. Corn	Bushels	5	2,332	3,289	3,932	249	309	633	-2,083	-2,980	-3,299
6. Corn Silage	Tons	6	371	468	575	747	822	900	376	354	325
7. Oats	Bushels	7	1,300	1,654	2,000	14,429	16,461	12,393	13,129	14,807	10,393
8. Potatoes	Cwt.	8	570	657	735	4,813	6,883	9,173	4,243	6,226	8,438
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	788	941	1,050	310	351	295
11. Increased Irrigation Efficiency	Acres	11	93	90	78	75	72	68	-18	-18	-10
12. North Platte Decree Irrigation	Acres	12	49	49	43	37	37	35	-12	-12	-8
13. Irrigation Outside Decree Area	Acres	13	204	198	184	204	211	213	0	13	29
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	98,625	143,800	162,840	51,348	85,790	89,506
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	228,730	249,140	192,410	170,975	186,204	125,351
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	14	12	12	-90	-90	-84
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	241	248	248	59	67	85
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,479	6,544	6,484	1,428	1,442	598
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	887,600	1,059,300	897,000	677,600	774,300	562,000
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,537	5,583	6,690	5,499	5,545	3,257
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	290	290	302	252	252	172
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	95	95	115	19	17	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	0	0	0	-39	-39	-39
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	248	248	250	-68	-70	-25
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	593	593	581	-252	-252	-172
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yr$. Discount to Present, 1975.				
51. State & Private Timber Harvests	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yr$. Discount to Present, 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

* Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE IV 100 Percent Return Flow Reduction

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future IV responds to the zero discharge of irrigation return flow question as does Alternative Future II. The difference is that the agricultural production is not limited to the Basin's share of national demand for food and fiber. This table shows the effect of reducing return flows to zero.

Platte Basin Concerns	Specific Study Objectives: Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative): 1985	2000	2020	Necessary Commitments to 2000: USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	0	0	0	-	-	-	-
	2. Acres with Return Flows	Acre	243	0	0	0	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	6,946	7,234	7,105	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	6,453	4,511	2,910	1,511	2,627	4,335	7,816
	5. Proper Land Use Change	Acre	0	2,536	2,619	1,523	132	1,077	1,736	3,155
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	48	44	45	67	531	225	4,059
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	189	190	190	78	668	198	4,819
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	214	222	224	224	1,770	749	13,531
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	5,540	5,583	6,690	502	4,522	3,406	5,639
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	290	333	302	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,561	6,642	6,614	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.247	0.244	0.245	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	593	550	581	42	0	344	113
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							2,841	23,367	11,419	39,842

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE IV -- 100 Percent Return Flow Reduction
Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,837	4,622	3,415	3,548	4,272	3,004
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	36	39	39	-647	-757	-871
3. Barley	Bushels	3	618	643	621	10,257	12,674	11,139	9,639	12,031	10,518
4. Dry Beans	Cwt.	4	234	152	96	824	957	1,095	590	805	999
5. Corn	Bushels	5	2,332	3,289	3,932	250	467	633	-2,082	-2,822	-3,299
6. Corn Silage	Tons	6	371	468	575	747	817	900	376	349	325
7. Oats	Bushels	7	1,300	1,654	2,000	14,611	16,640	12,480	13,311	14,986	10,480
8. Potatoes	Cwt.	8	570	657	735	4,813	6,886	9,177	4,243	6,229	8,442
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	788	996	1,050	310	406	295
11. Increased Irrigation Efficiency	Acres	11	93	90	78	48	44	45	-45	-46	-33
12. North Platte Decree Irrigation	Acres	12	49	49	43	17	19	19	-32	-30	-24
13. Irrigation Outside Decree Area	Acres	13	204	198	184	197	203	205	-7	5	21
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	97,847	142,970	162,020	50,570	84,960	88,686
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	229,010	248,620	191,480	171,253	185,684	124,421
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	0	0	0	-104	-102	-96
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	214	222	224	32	41	61
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,561	6,642	6,614	1,510	1,540	728
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	893,600	1,072,700	899,400	683,600	787,700	564,400
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,540	5,583	4,886	5,502	5,545	1,453
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	290	332	302	252	294	172
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	95	95	115	19	19	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	247	244	245	-69	-74	-30
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	593	551	581	-252	-294	-172
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

* Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

<u>NATIONAL ECONOMIC DEVELOPMENT ACCOUNT</u>

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. IV 0% Return Flow Reduction	Alt. Fut. IV 50% Return Flow Reduction	Alt. Fut. IV 75% Return Flow Reduction	Alt. Fut. IV 100% Return Flow Reduction
1. Agricultural Crop Sales	$	1985	114,104	384,090	385,259	382,134	381,576
2. Livestock Sales	$	1985	80,852	99,117	99,196	98,988	98,953
3. Forestry Sector Sales	$	1985	11,019	11,941	11,979	12,043	12,132
4. Service Sector Sales	$	1985	41,462	68,244	68,481	68,435	68,709
5. Total of Private Sales(1)	$	1985	336,883	791,599	796,296	796,931	803,339
6. Agriculture - Private (2)	$	1985	47,277	99,278	99,000	98,625	97,847
Net Revenue	$	2000	58,060	114,460	144,140	143,800	142,970
	$	2020	73,334	163,480	163,130	162,840	162,020
7. Agriculture - Private (2)	$	1985	57,755	229,550	228,730	228,730	229,010
Production Cost	$	2000	62,936	248,380	249,000	249,140	248,620
	$	2020	67,059	191,600	192,650	192,410	191,480
8. Water Devel. Projects	$	1978	(3)	0	0	0	0
Public Cost	($)	1978	(3)	0	0	0	0
Private Cost	($)	1978	(3)	0	0	0	0
9. Forestry Development	$	1975	(3)	-5,175	-5,175	-5,175	-5,175
Public Pres Worth	$	1975	(3)	-6,804	-6,804	-6,804	-6,804
Pvt Nt Pres Worth	$	1975	(3)	1,629	1,629	1,629	1,629
10. Increased	Ac	1985	93	84	77	75	48
Irrigation	Ac	2000	90	76	81	72	44
Efficiency	Ac	2020	78	77	82	68	45
11. Full Water	Ac	1985	171	213	214	212	189
Supply	Ac	2000	164	212	214	209	190
Irrigated	Ac	2020	162	210	212	205	190
12. Land Use Change	Ac	1985	367	2,506	2,507	2,506	2,508
Rangeland to	Ac	2000	358	2,600	2,601	2,601	2,601
Dry Cropland	Ac	2020	358	1,502	1,502	1,502	1,502
13. Land Use Change	Ac	1985	6	20	18	18	18
Rangeland to	Ac	2000	0	14	13	13	13
Irrigated Croplnd	Ac	2020	1	16	16	16	16
14. Land Use Change	Ac	1985	6	10	10	10	10
Dry Cropland to	Ac	2000	17	6	6	6	5
Irrigated Croplnd	Ac	2020	20	6	6	6	6
15. Rangeland with	Ac	1985	38	5,537	5,537	5,537	5,540
Treatment	Ac	2000	38	5,583	5,583	5,583	5,583
	Ac	2020	3,433	6,690	6,690	6,690	6,690
16. Municipal and	AF	1985	18	18	18	18	18
Industrial Water	AF	2000	18	18	18	18	18
	AF	2020	18	18	18	18	18
17. Agricultural	Ac	1985	91	91	91	91	91
Flooding	Ac	2000	91	91	91	91	91
	Ac	2020	91	91	91	91	91
18. Livestock	AUM	1985	2,581	2,581	2,581	2,581	2,581
	AUM	2000	2,560	2,560	2,560	2,560	2,560
	AUM	2020	3,423	3,423	3,423	3,423	3,423
19. Zero Discharge	Ac	1985	62	178	185	197	214
Systems	Ac	2000	62	178	194	209	222
	Ac	2020	62	179	203	213	224
20. Wldrns-Backcntry Expr	RD	2020	124	51	51	51	51
21. Fishing	RD	1985	1,674	2,127	2,127	2,127	2,127
	RD	2000	2,269	2,127	2,127	2,127	2,127
	RD	2020	3,486	2,127	2,127	2,127	2,127
22. Big Game	RD	1985	219	195	195	195	195
Hunting	RD	2000	315	195	195	195	195
	RD	2020	517	195	195	195	195
23. Small Game and	RD	1985	137	84	84	84	84
Bird Hunting	RD	2000	206	84	84	84	84
	RD	2020	374	84	84	84	84
24. Boating	RD	1985	1,115	1,115	1,115	1,115	1,115
Swimming	RD	2000	1,273	1,273	1,273	1,273	1,273
Water Skiing	RD	2020	1,514	1,514	1,514	1,514	1,514
25. Total Timber Harvest	MBF	1975	15,530	21,670	21,670	21,670	21,670
26. Annual	MBF	1985	47	47	47	47	47
Timber	MBF	2000	54	54	54	54	54
Harvest	MBF	2020	59	59	59	59	59
27. Thinning and	Acres	1985	14.5	6.9	6.9	6.9	6.9
Planting	Acres	2000	28.0	81.9	81.9	81.9	81.9
Accumulated	Acres	2020	44.2	118.2	118.2	118.2	118.2

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.

(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Output from the LP were used as inputs to the I-O.

(3). Information not available.

E N V I R O N M E N T A L   Q U A L I T Y   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. IV 0% Return Flow Reduction	Alt. Fut. IV 50% Return Flow Reduction	Alt. Fut. IV 75% Return Flow Reduction	Alt. Fut. IV 100% Return Flow Reduction
Areas of Consideration							
1. Rivers and Streams	Mi	2020	4.4	4.4	4.4	4.4	4.4
2. Lakes and Reservoirs	Ac	2020	71.6	71.6	71.6	71.6	71.6
3. Protected Aquatic Animal Habitat	Mi	1985	316	250	247	248	247
	Mi	2000	318	246	244	248	244
	Mi	2020	275	250	245	250	245
4. Protected Terrestrial Animal Habitat	Ac	1985	845	593	593	593	593
	Ac	2000	845	593	593	593	551
	Ac	2020	753	581	581	581	581
5. Critical Big Game Habitat	Ac	1985	552	300	300	300	300
	Ac	2000	552	300	300	300	257
	Ac	2020	460	288	288	288	288
6. Critical Big Game Use	AUM	1985	33	33	33	33	33
	AUM	2000	33	33	33	33	33
	AUM	2020	33	33	33	33	33
7. Wilderness Class	Ac	2020	290	164	164	164	164
8. Backcountry Mgt	Ac	2020	(1)	126	126	126	126
Water, Air, Land Quality							
9. Non - Point Source Pollutn-Irrigtn Return Flows	AcFt	1985	104	55	27	14	0
	AcFt	2000	102	49	25	12	0
	AcFt.	2020		49	24	12	0
10. Non - Point Source Polutn - Acres With Flows	Ac	1985	182	260	248	241	0
	Ac	2000	181	251	255	248	0
	Ac	2020	163	251	256	248	0
11. Water Erosion Annual Total	Ton	1985	5,831	6,953	6,949	6,947	6,946
	Ton	2000	5,803	7,241	7,237	7,237	7,234
	Ton	2020	6,665	7,112	7,111	7,109	7,105
12. Water Erosion Over 0.5 t/a/yr	Ac	1985	5,051	6,479	6,562	6,544	6,561
	Ac	2000	5,102	6,643	6,645	6,544	6,642
	Ac	2020	5,886	6,484	6,614	6,484	6,614
13. Land Treatment Minimum Tillage	Ac	1985	607	3,412	3,366	3,364	3,388
	Ac	2000	604	3,502	3,469	3,474	3,494
	Ac	2020	606	2,405	2,391	2,384	2,396
14. Land Treatment Wind Strip	Ac	1985	122	278	279	279	279
	Ac	2000	110	288	288	288	288
	Ac	2020	113	288	288	288	288
15. Land Treatment Contour Farming	Ac	1985	209	2,768	2,766	2,769	2,786
	Ac	2000	285	719	723	727	729
	Ac	2020	105	206	210	216	226
16. Land Treatment Permanent Cover	Ac	1985	144	14	49	44	0
	Ac	2000	143	13	51	40	0
	Ac	2020	125	123	31	29	0
17. Agric Land Quality Antelope Habitat	Indx	1985	1.25	1.18	1.18	1.18	1.18
	Indx	2020	1.36	1.32	1.32	1.23	1.32
18. Agric Land Quality Deer Habitat	Indx	1985	1.32	1.45	1.45	1.45	1.45
	Indx	2020	1.51	1.53	1.53	1.53	1.53
19. Agric Land Quality Elk Habitat	Indx	1985	1.57	1.90	1.90	1.90	1.90
	Indx	2020	1.95	2.02	2.02	2.02	2.02
20. Agric Land Quality Grouse Habitat	Indx	1985	1.34	1.62	1.62	1.62	1.62
	Indx	2020	1.49	1.68	1.68	1.68	1.68
21. Forestland Quality Air Quality	Indx	1985	0.92	0.92	0.92	0.92	0.92
	Indx	2020	0.89	0.89	0.89	0.89	0.89
22. Forestland Quality Water Quality	Indx	1985	0.86	0.86	0.86	0.86	0.86
	Indx	2020	0.86	0.86	0.86	0.86	0.86
23. Forestland Quality Wildlife Quality	Indx	1985	0.88	0.88	0.88	0.88	0.88
	Indx	2020	0.87	0.87	0.87	0.87	0.87
24. Forestland Quality Development & Use	Indx	1985	0.98	0.98	0.98	0.98	0.98
	Indx	2020	0.96	0.96	0.96	0.96	0.96
Irreversible Commitments							
25. Petroleum Fuel Use Annual Total Rec Ag For	Gal	1985	(1)	49565	49546	49282	49807
	Gal	2000	(1)	57351	57341	57304	57243
	Gal	2020	(1)	50227	50294	50188	49930
26. Prime Cropland Lost							
To Project	Ac	2020	(1)	(1)	(1)	(1)	(1)
To Attrition	Ac	2020	(1)	(1)	(1)	(1)	(1)
27. Prime Forestland Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
28. Crit Wildlf Area Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
29. Rivers & Streams Lost							
To Project	Mi	2020	(1)	0	0	0	0
To Attrition	Mi	2020	(1)				
30. Historic/Archeol Lost	Site	2020	(1)	0	0	0	0

(1) Information not available.

REGIONAL DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. IV 0% Return Flow Reduction	Alt. Fut. IV 50% Return Flow Reduction	Alt. Fut. IV 75% Return Flow Reduction	Alt. Fut. IV 100% Return Flow Reduction
Income Effects							
1. Household Income	$	1985	164,727	380,560	382,409	381,887	383,903
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
2. Gov't Expenditures	$	1985	387,079	909,550	914,947	915,676	923,039
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
Number of Jobs							
3. Agricultural Crops	No.	1985	3.3	11.0	11.1	11.0	11.0
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
4. Livestock Industry	No.	1985	2.1	2.6	2.6	2.6	2.6
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
5. Forestry Indusry	No.	1985	0.4	0.4	0.4	0.4	0.4
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
6. All Other Sectors	No.	1985	6.9	12.4	12.5	12.7	13.0
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
7. Project Generatd Jobs	No.	1979	(1)	(1)	(1)	(1)	(1)
Type of Jobs							
8. Professional & Techn	No.	1985	0.7	1.5	1.5	1.5	1.6
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
9. Managerial & Admin	No.	1985	4.4	10	10	10	10
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
10. Sales and Clerical	No.	1985	1.5	2.8	2.8	2.8	2.8
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
11. Craftmen Foremen Mec	No.	1985	1.2	2.6	2.7	2.8	2.9
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
12. Equipment Operators	No.	1985	0.9	1.7	1.7	1.7	1.8
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
13. Service Workers	No.	1985	1.6	2.1	2.1	2.1	2.1
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
14. Non-Farm Labor	No.	1985	0.7	1.4	1.5	1.5	1.5
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
15. Farm Labor & Foremen	No.	1985	1.7	4.3	4.3	4.3	4.3
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Population Effect							
16. Agricultural Crop	No.	1985	10.8	35.7	35.8	35.5	35.5
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
17. Livestock Industry	No.	1985	6.9	8.4	8.4	8.4	8.4
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
18. Forestry Industry	No.	1985	1.3	1.4	1.4	1.4	1.4
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
19. All Other Sectors	No.	1985	22.3	40.1	40.5	41.1	42.1
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)

(1) Information not available.

S O C I A L   W E L L - B E I N G   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. IV 0% Return Flow Reduction	Alt. Fut. IV 50% Return Flow Reduction	Alt. Fut. IV 75% Return Flow Reduction	Alt. Fut. IV 100% Return Flow Reduction
Household Income By Sectors							
1. Agricultural Crops Income	$	1985	62,140	180,464	181,012	179,552	179,294
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
2. Livestock Industry Income	$	1985	39,375	47,526	47,564	47,465	47,448
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
3. Forestry Industry Income	$	1985	3,198	3,468	3,479	3,498	3,523
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
4. Construction Industry Income	$	1985	5,333	13,673	14,105	14,870	15,922
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
5. Auto Dealers and Gas Stations Income	$	1985	2,055	2,852	2,860	2,862	2,873
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
6. Eating & Drinking & Lodging Places Income	$	1985	4,069	4,257	4,258	4,260	4,263
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
7. Other Retail Persons, Repair Services Income	$	1985	6,301	10,192	10,242	10,270	10,354
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
8. Governmental Services Income	$	1985	27,653	54,817	55,182	55,375	55,967
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
9. All Other Sectors	$	1985	26,297	63,311	63,707	63,735	64,259
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
Minority & Women Employmt							
10. Professional, Techn, Admin, & Managerial	No.	1985	0.537	0.874	0.877	0.881	0.888
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
11. Sales People and Clerical Help	No.	1985	1 166	1.961	1.973	1.980	2.000
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
12. Craftsmen, Foremen & Mechanics	No.	1985	0.094	0.192	0.196	0.201	0.209
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
13. Equipment Operators	No.	1985	0.204	0.331	0.334	0.337	0.342
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
14. Service Workers	No.	1985	1 403	1.655	1.657	1.656	1.663
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
15. Non-Farm Laborers	No.	1985	0.087	0.176	0.178	0.180	0.182
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
16. Farm Labor and Foremen	No.	1985	0.315	0.659	0.661	0.657	0.656
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Life, Health, and Safety							
17. No Fld Protectn Agric	Ac	1979	(1)	(1)	(1)	(1)	(1)
18. No Fld Protectn Urban	Ac	1979	(1)	(1)	(1)	(1)	(1)
Loss of Future Options							
19. Crop Futures Foregone	Indx	1985	(1)	6.057	5.677	6.340	9.336
20. Water Use F Foregone	Indx	1985	(1)	0.190	0.190	0.351	1.941
21. Range & Wldlf F Fgone	Indx	1985	(1)	1.864	1.881	1.875	1.881
22. Fishg & Huntg F Fgone	Indx	1985	(1)	0.000	0.000	0.000	0.000
23. Recreatn F Foregone	Indx	1985	(1)	0.960	0.960	0.960	0.960
24. Timber Harvst F Fgone	Indx	1985	(1)	0.000	0.000	0.000	0.000
25. 1985 Futures Foregone	Indx	1985	(1)	9.071	8.708	9.527	14.119
26. 2000 Futures Foregone	Indx	2000	(1)	7.593	7.450	7.853	10.724
27. 2020 Futures Foregone	Indx	2020	(1)	4.861	4.786	5.326	9.488
Reserve Productn Capacity							
28. Agriculturl Cropland	Ac	2020	(1)	443	438	446	463
29. Livestock Production	AUM	2020	(1)	0	0	0	0
30. Timber Production	MBF	2020	(1)	53	53	53	53
31. Ground Water Reservoir	AF	2020	(1)	0	0	0	0

(1) Information not available.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE V Import Green River Basin - 50 Percent Increase

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future V responds to the question of importing Green River Basin water into the Platte Basin. The Basin's agricultural production is not to exceed its share of national needs. This table shows the effect of increasing the irrigation water to irrigated lands along the main stem of the North Platte River.

Platte Basin Concerns	Specific Study Objectives: Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative): 1985	2000	2020	Necessary Commitments to 2000: USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	118	118	108	-	-	-	-
	2. Acres with Return Flows	Acre	243	218	218	199	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	5,842	5,810	6,673	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	1,113	1,174	983	274	476	785	1,416
	5. Proper Land Use Change	Acre	0	402	378	384	21	168	270	491
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	96	93	81	134	1,062	449	8,119
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	184	180	181	70	602	178	4,337
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	66	65	63	6	44	14	338
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,434	3	31	23	38
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,064	5,117	5,908	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.318	0.316	0.274	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	249	5,817	204	136
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							852	14,555	2,635	15,610

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE V

Import Green River Basin Water 50 Percent Increase

Comparison of Alternative Future with National Demands and Resource Constraints

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	547	641	687	-136	-155	-233
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	336	337	0	-132	-238
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	315	422	455	-163	-168	-300
11. Increased Irrigation Efficiency	Acres	11	93	90	78	96	93	81	3	3	3
12. North Platte Decree Irrigation	Acres	12	49	49	43	49	49	44	0	0	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	236	233	219	32	35	35
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	48,984	60,103	75,775	1,707	2,093	2,441
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	59,587	65,208	69,714	1,832	2,272	2,655
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	118	116	108	14	14	12
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	218	218	199	36	37	36
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,064	5,117	5,908	13	15	22
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,434	0	0	1
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	75	75	102	-1	-1	0
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,466	2,445	3,281	1	3	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	318	316	274	2	-2	-1
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvest	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE V Import Green River Basin Water - 100 Percent Increase

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future V responds to the question of importing Green River Basin water into the Platte River Basin. The Basin's agricultural production is not to exceed its share of national needs. This table shows the effect of increasing the irrigation water to irrigated lands along the main stem of the North Platte River. About 398,500 acre-feet of water is imported to be used for irrigated agriculture.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	134	131	124	-	-	-	-
	2. Acres with Return Flows	Acre	243	253	250	237	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	5,832	5,814	6,682	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	1,145	1,207	1,019	280	487	803	1,447
	5. Proper Land Use Change	Acre	0	437	395	403	22	182	290	534
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	99	94	98	139	1,095	463	8,372
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	199	197	199	90	769	228	5,542
Flood Protection	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge	9. Zero Discharge Systems	Acre	62	63	65	62	4	33	14	254
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,434	3	31	23	38
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	4,952	5,135	5,890	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.327	0.315	0.275	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							882	14,769	2,737	17,058

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE V — Import Green River Basin Water 100 Percent Increase

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	602	707	774	-81	-89	-136
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	370	303	0	-98	-272
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	328	416	484	-150	-174	-271
11. Increased Irrigation Efficiency	Acres	11	93	90	78	99	94	98	6	4	20
12. North Platte Decree Irrigation	Acres	12	49	49	43	49	49	44	0	0	-1
13. Irrigation Outside Decree Area	Acres	13	204	198	184	267	267	254	63	69	70
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	50,542	62,044	78,041	3,265	4,034	4,707
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	61,531	67,448	72,549	3,776	4,512	5,490
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	134	131	124	30	29	28
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	253	250	237	71	69	74
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	4,952	5,135	5,890	-99	33	-6
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,434	0	0	1
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	75	77	102	-1	-1	0
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,466	2,443	3,281	1	1	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	327	315	275	11	-3	0
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present, 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260						
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present, 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE V Import Green River Basin Water - No Limit On Import

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future V responds to the question of importing Green River Basin water into the Platte River Basin. The Basin agricultural production is not to exceed its share of national needs. This table shows the effect of increasing the irrigation water to irrigated lands along the main stem of the North Platte River.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	370	362	378	-	-	-	-
	2. Acres with Return Flows	Acre	243	462	239	437	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	5,966	5,844	6,734	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	985	1,124	1,055	258	454	743	1,338
	5. Proper Land Use Change	Acre	0	450	348	479	23	191	307	559
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	42	38	30	59	465	197	3,552
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	457	414	411	425	3,643	1,079	29,879
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	62	62	62	0	0	0	0
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,241	3	31	23	38
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,283	5,198	6,159	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.307	0.312	0.263	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	10	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	0	0	0	0
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							1,112	16,956	3,265	36,237

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE V -- Import Green River Basin Water No Limit on Import

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	683	796	910	0	0	0
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	468	575	0	0	0
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	478	576	629	0	-14	-126
11. Increased Irrigation Efficiency	Acres	11	93	90	78	42	38	30	-51	-52	-48
12. North Platte Decree Irrigation	Acres	12	49	49	43	0	0	0	-49	-49	-43
13. Irrigation Outside Decree Area	Acres	13	204	198	184	464	441	438	260	243	254
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	61,904	75,172	94,821	14,627	17,162	21,487
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	59,393	66,359	73,438	1,638	3,423	6,379
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	370	362	378	266	260	282
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	462	439	437	280	258	274
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,283	5,198	6,159	232	96	273
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,231	0	0	-2
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	80	81	102	4	5	0
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,461	2,439	3,281	-4	-3	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	307	312	263	-9	-6	-12
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present, 1975				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present, 1975				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

* Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

N A T I O N A L   E C O N O M I C   D E V E L O P M E N T   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. V Import Gr.Rv. Water 50% Inc	Alt. Fut. V Import Gr. Rv. Water 100% Inc	Alt. Fut. V Import Gr.Rv Water No Lim		
1. Agricultural Crop Sales	$	1985	114,104	117,866	121,567	131,441		
2. Livestock Sales	$	1985	80,852	81,205	81,453	82,116		
3. Forestry Sector Sales	$	1985	11,019	11,007	10,991	10,986		
4. Service Sector Sales	$	1985	41,462	41,742	42,007	42,850		
5. Total of Private Sales(1)	$	1985	336,883	341,144	345,094	358,694		
6. Agriculture - Private (2)	$	1985	47,277	48,984	50,542	61,904		
Net Revenue	$	2000	58,060	60,103	62,044	75,172		
	$	2020	73,334	75,775	78,041	94,821		
7. Agriculture - Private (2)	$	1985	57,755	59,587	61,531	59,393		
Production Cost	$	2000	62,936	65,208	67,448	66,359		
	$	2020	67,059	69,714	72,549	73,438		
8. Water Devel. Projects	$	1978	(3)	0	0	0		
Public Cost	($)	1978	(3)	0	0	0		
Private Cost	($)	1978	(3)	0	0	0		
9. Forestry Development	$	1975	(3)	-5,175	-5,175	-5,175		
Public Pres Worth	$	1975	(3)	-6,804	-6,804	-6,804		
Pvt Nt Pres Worth	$	1975	(3)	1,629	1,629	1,629		
10. Increased	Ac	1985	93	96	99	42		
Irrigation	Ac	2000	90	93	94	38		
Efficiency	Ac	2020	78	81	98	30		
11. Full Water	Ac	1985	171	184	199	457		
Supply	Ac	2000	164	180	197	414		
Irrigated	Ac	2020	162	181	199	411		
12. Land Use Change	Ac	1985	367	376	385	138		
Rangeland to	Ac	2000	358	347	340	75		
Dry Cropland	Ac	2020	358	348	347	202		
13. Land Use Change	Ac	1985	6	9	20	264		
Rangeland to	Ac	2000	0	17	28	210		
Irrigated Croplnd	Ac	2020	1	18	29	83		
14. Land Use Change	Ac	1985	6	17	32	48		
Dry Cropland to	Ac	2000	17	14	27	63		
Irrigated Croplnd	Ac	2020	20	18	27	194		
15. Rangeland with	Ac	1985	38	38	38	38		
Treatment	Ac	2000	38	38	38	38		
	Ac	2020	3,433	3,434	3,434	3,434		
16. Municipal and	AF	1985	18	18	18	18		
Industrial Water	AF	2000	18	18	18	18		
	AF	2020	18	18	18	18		
17. Agricultural	Ac	1985	91	91	91	91		
Flooding	Ac	2000	91	91	91	91		
	Ac	2020	91	91	91	91		
18. Livestock	AUM	1985	2,581	2,581	2,581	2,581		
	AUM	2000	2,560	2,560	2,560	2,560		
	AUM	2020	3,423	3,423	3,423	3,423		
19. Zero Discharge	Ac	1985	62	66	63	1		
Systems	Ac	2000	62	65	65	2		
	Ac	2020	62	63	61	2		
20. Wldrns-Backcntry Expr	RD	2020	124	51	51	51		
21. Fishing	RD	1985	1,674	2,127	2,127	2,127		
	RD	2000	2,269	2,127	2,127	2,127		
	RD	2020	3,486	2,127	2,127	2,127		
22. Big Game	RD	1985	219	195	195	195		
Hunting	RD	2000	315	195	195	195		
	RD	2020	517	195	195	195		
23. Small Game and	RD	1985	137	84	84	84		
Bird Hunting	RD	2000	206	84	84	84		
	RD	2020	374	84	84	84		
24. Boating	RD	1985	1,115	1,115	1,115	1,115		
Swimming	RD	2000	1,273	1,273	1,273	1,273		
Water Skiing	RD	2020	1,514	1,514	1,514	1,514		
25. Total Timber Harvest	MBF	1975	15,530	21,670	21,670	21,670		
26. Annual	MBF	1985	47	47	47	47		
Timber	MBF	2000	54	54	54	54		
Harvest	MBF	2020	59	59	59	59		
27. Thinning and	Acres	1985	14.6	6.9	6.9	6.9		
Planting	Acres	2000	28.0	81.9	81.9	81.9		
Accumulated	Acres	2020	44.2	118.2	118.2	118.2		

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.

(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Output from the LP were used as inputs to the I-O.

(3). Information not available.

E N V I R O N M E N T A L   Q U A L I T Y   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. V Import Gr. Rv: Water 50% Inc	Alt. Fut. V Import Gr. Rv: Water 100% Inc	Alt. Fut. V Import Gr. Rv: Water No Lim
Areas of Consideration						
1. Rivers and Streams	Mi	2020	4.4	4.4	4.4	4.4
2. Lakes and Reservoirs	Ac	2020	71.6	71.6	71.6	71.6
3. Protected Aquatic	Mi	1985	316	318	327	307
Animal Habitat	Mi	2000	318	316	315	312
	Mi	2020	275	274	275	263
4. Protected Terrestrial	Ac	1985	845	845	845	845
Animal Habitat	Ac	2000	845	845	845	845
	Ac	2020	753	753	753	753
5. Critical	Ac	1985	552	552	552	552
Big Game	Ac	2000	552	552	552	552
Habitat	Ac	2020	460	460	460	460
6. Critical	AUM	1985	33	33	33	33
Big Game	AUM	2000	33	33	33	33
Use	AUM	2020	33	33	33	33
7. Wilderness Class	Ac	2020	290	164	164	164
8. Backcountry Mgt	Ac	2020	(1)	126	126	126
Water, Air, Land Quality						
9. Non - Point Source	AcFt	1985	104	118	134	370
Pollutn-Irrigtn	AcFt	2000	102	116	131	362
Return Flows	AcFt.	2020		108	124	378
10. Non - Point Source	Ac	1985	182	218	253	462
Polutn - Acres	Ac	2000	181	218	250	439
With Flows	Ac	2020	163	199	237	437
11. Water Erosion	Ton	1985	5,831	5,842	5,832	5,966
Annual Total	Ton	2000	5,803	5,810	5,814	5,844
	Ton	2020	6,665	6,673	6,682	6,734
12. Water Erosion	Ac	1985	5,051	5,064	4,952	5,283
Over 0.5 t/a/yr	Ac	2000	5,102	5,117	5,135	5,198
	Ac	2020	5,886	5,908	5,890	6,159
13. Land Treatment	Ac	1985	607	609	609	362
Minimum	Ac	2000	604	604	605	419
Tillage	Ac	2020	606	605	605	422
14. Land Treatment	Ac	1985	122	120	120	186
Wind	Ac	2000	110	111	115	194
Strip	Ac	2020	113	113	114	199
15. Land Treatment	Ac	1985	209	207	209	145
Contour	Ac	2000	285	283	280	219
Farming	Ac	2020	105	105	106	152
16. Land Treatment	Ac	1985	144	177	207	292
Permanent	Ac	2000	143	176	207	292
Cover	Ac	2020	125	160	194	282
17. Agric Land Quality	Indx	1985	1.25	1.24	1.24	1.24
Antelope Habitat	Indx	2020	1.36	1.37	1.36	1.37
18. Agric Land Quality	Indx	1985	1.32	1.32	1.32	1.31
Deer Habitat	Indx	2020	1.51	1.51	1.51	1.53
19. Agric Land Quality	Indx	1985	1.57	1.57	1.55	1.62
Elk Habitat	Indx	2020	1.95	1.96	1.95	1.97
20. Agric Land Quality	Indx	1985	1.34	1.34	1.33	1.35
Grouse Habitat	Indx	2020	1.49	1.49	1.48	1.54
21. Forestland Quality	Indx	1985	0.92	0.92	0.92	0.92
Air Quality	Indx	2020	0.89	0.89	0.89	0.89
22. Forestland Quality	Indx	1985	0.86	0.86	0.86	0.86
Water Quality	Indx	2020	0.86	0.86	0.86	0.86
23. Forestland Quality	Indx	1985	0.88	0.88	0.88	0.88
Wildlife Quality	Indx	2020	0.87	0.87	0.87	0.87
24. Forestland Quality	Indx	1985	0.98	0.98	0.98	0.98
Development & Use	Indx	2020	0.96	0.96	0.96	0.96
Irreversible Commitments						
25. Petroleum Fuel Use	Gal	1985	(1)	21689	22083	22944
Annual Total	Gal	2000	(1)	23997	24467	25531
Rec Ag For	Gal	2020	(1)	26054	26562	28132
26. Prime Cropland Lost						
To Project	Ac	2020	(1)	(1)	(1)	(1)
To Attrition	Ac	2020	(1)	(1)	(1)	(1)
27. Prime Forestland Lost	Ac	2020	(1)	(1)	(1)	(1)
28. Crit Wildlf Area Lost	Ac	2020	(1)	(1)	(1)	(1)
29. Rivers & Streams Lost						
To Project	Mi	2020	(1)	0	0	0
To Attrition	Mi	2020	(1)			
30. Historic/Archeol Lost	Site	2020	(1)	0	0	0

(1) Information not available.

REGIONAL DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. V Import Gr. Rv Water 50% Inc	Alt. Fut. V Import Gr. Rv. Water 100% Inc	Alt. Fut. V Import Gr. Rv Water No Lim.		
Income Effects								
1. Household Income	$	1985	164,727	167,039	169,233	176,111		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
2. Gov't Expenditures	$	1985	387,079	391,976	396,514	412,141		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
Number of Jobs								
3. Agricultural Crops	No.	1985	3.3	3.4	3.5	3.8		
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)		
4. Livestock Industry	No.	1985	2.1	2.1	2.1	2.1		
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)		
5. Forestry Indusry	No.	1985	0.4	0.4	0.4	0.4		
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)		
6. All Other Sectors	No.	1985	6.9	6.9	6.9	7.0		
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)		
7. Project Generatd Jobs	No.	1979	(1)	(1)	(1)	(1)		
Type of Jobs								
8. Professional & Techn	No.	1985	0.7	0.7	0.7	0.7		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
9. Managerial & Admin	No.	1985	4.4	4.5	4.5	4.7		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
10. Sales and Clerical	No.	1985	1.5	1.5	1.5	1.6		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
11. Craftmen Foremen Mec	No.	1985	1.2	1.2	1.2	1.2		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
12. Equipment Operators	No.	1985	0.9	0.9	0.9	0.9		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
13. Service Workers	No.	1985	1.6	1.6	1.6	1.6		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
14. Non-Farm Labor	No.	1985	0.7	0.7	0.7	0.7		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
15. Farm Labor & Foremen	No.	1985	1.7	1.7	1.8	1.9		
Total	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
Population Effect								
16. Agricultural Crop	No.	1985	10.8	11.1	11.5	12.4		
Population	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
17. Livestock Industry	No.	1985	6.9	6.9	6.9	6.9		
Population	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
18. Forestry Industry	No.	1985	1.3	1.3	1.3	1.3		
Population	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
19. All Other Sectors	No.	1985	22.3	22.3	22.2	22.5		
Population	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		

(1) Information not available.

S O C I A L   W E L L - B E I N G   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. V Import Gr.Rv. Water 50% Inc	Alt. Fut. V Import Gr.Rv. Water 100% Inc	Alt. Fut. V Import Gr.Rv. Water No Lim		
Household Income By Sectors								
1. Agricultural Crops Income	$	1985	62,140	55,782	57,515	62,138		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
2. Livestock Industry Income	$	1985	39,375	38,937	39,056	39,374		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
3. Forestry Industry Income	$	1985	3,198	3,196	3,191	3,190		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
4. Construction Industry Income	$	1985	5,333	5,363	5,142	4,999		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
5. Auto Dealers and Gas Stations Income	$	1985	2,055	2,087	2,094	2,117		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
6. Eating & Drinking & Lodging Places Income	$	1985	4,069	4,116	4,118	4,121		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
7. Other Retail Persons, Repair Services Income	$	1985	6,301	6,257	6,284	6,392		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
8. Governmental Services Income	$	1985	27,653	26,648	26,835	27,605		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
9. All Other Sectors	$	1985	26,297	24,653	24,998	26,175		
	$	2000	(1)	(1)	(1)	(1)		
	$	2020	(1)	(1)	(1)	(1)		
Minority & Women Employmt								
10. Professional, Techn, Admin, & Managerial	No.	1985	0.537	0.528	0.531	0.540		
	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
11. Sales People and Clerical Help	No.	1985	1.166	1.146	1.152	1.172		
	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
12. Craftsmen, Foremen & Mechanics	No.	1985	0.094	0.093	0.092	0.092		
	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
13. Equipment Operators	No.	1985	0.204	0.203	0.203	0.206		
	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
14. Service Workers	No.	1985	1.403	1.420	1.419	1.426		
	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
15. Non-Farm Laborers	No.	1985	0.087	0.084	0.085	0.087		
	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
16. Farm Labor and Foremen	No.	1985	0.315	0.296	0.301	0.315		
	No.	2000	(1)	(1)	(1)	(1)		
	No.	2020	(1)	(1)	(1)	(1)		
Life, Health, and Safety								
17. No Fld Protectn Agric	Ac	1979	(1)	(1)	(1)	(1)		
18. No Fld Protectn Urban	Ac	1979	(1)	(1)	(1)	(1)		
Loss of Future Options								
19. Crop Futures Foregone	Indx	1985	(1)	1.097	1.097	1.097		
20. Water Use F Foregone	Indx	1985	(1)	0.020	0.020	49.000		
21. Range & Wldlf F Fgone	Indx	1985	(1)	0.221	0.190	0.261		
22. Fishg & Huntg F Fgone	Indx	1985	(1)	0.000	0.000	0.000		
23. Recreatn F Foregone	Indx	1985	(1)	0.960	0.960	0.960		
24. Timber Harvst F Fgone	Indx	1985	(1)	0.000	0.000	0.000		
25. 1985 Futures Foregone	Indx	1985	(1)	2.298	2.268	51.317		
26. 2000 Futures Foregone	Indx	2000	(1)	2.462	2.466	51.456		
27. 2020 Futures Foregone	Indx	2020	(1)	4.003	3.999	52.921		
Reserve Productn Capacity								
28. Agriculturl Cropland	Ac	2020	(1)	943	919	924		
29. Livestock Production	AUM	2020	(1)	268	264	280		
30. Timber Production	MBF	2020	(1)	53	53	53		
31. Ground Water Reservoir	AF	2020	(1)	32	57	174		

(1) Information not available.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE VI

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: Alternative Future VI responds to the question of importing Green River Basin water. The Platte Basin water supply is reduced by requiring the anticipated municipal and industrial needs, as in Alternative Future III, be met. Also, a drought in the Basin is simulated by reducing the water yield from each watershed. Importation of water from the Green River Basin is allowed.

The Basin's agricultural production is not to exceed its share of national demand for food and fiber.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	94	99	91	-	-	-	-
	2. Acres with Return Flows	Acre	243	232	223	209	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	5,830	5,798	6,662	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	1,062	1,118	933	262	456	751	1,355
	5. Proper Land Use Change	Acre	0	384	366	378	20	158	246	461
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	73	70	60	102	807	342	6,174
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	158	152	148	36	312	92	2,249
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	72	64	64	14	111	47	846
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,432	3	31	23	38
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,060	5,108	5,885	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.320	0.317	0.275	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	164	164	164	6	105	0	0
	21. Backcountry Management	Acre	247	126	126	126	4	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							777	14,047	2,417	11,994

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of ALTERNATIVE FUTURE VI
Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	410	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	460	521	557	-223	-275	-353
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	330	341	0	-138	-234
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	304	429	445	-174	-161	-310
11. Increased Irrigation Efficiency	Acres	11	93	90	78	73	70	60	-20	-20	-18
12. North Platte Decree Irrigation	Acres	12	49	49	43	38	38	33	-11	-11	-10
13. Irrigation Outside Decree Area	Acres	13	204	198	184	194	185	176	-10	-13	-8
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	46,589	57,141	72,296	-688	-869	-1,038
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	56,804	61,598	65,729	-951	-1,338	-1,330
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	94	99	91	-10	-3	-5
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	232	223	209	50	42	46
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,060	5,108	5,885	9	6	-11
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,466	2,617	3,383	-75	97	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,432	0	0	-1
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	75	75	101	-1	-3	-1
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,466	2,445	3,281	1	3	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	320	317	275	4	-1	0
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

N A T I O N A L   E C O N O M I C   D E V E L O P M E N T   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. VI				
1. Agricultural Crop Sales	$	1985	114,104	111,695				
2. Livestock Sales	$	1985	80,852	78,664				
3. Forestry Sector Sales	$	1985	11,019	11,022				
4. Service Sector Sales	$	1985	41,462	41,169				
5. Total of Private Sales(1)	$	1985	336,883	331,247				
6. Agriculture - Private (2)	$	1985	47,277	46,589				
Net Revenue	$	2000	58,060	57,141				
	$	2020	73,334	72,296				
7. Agriculture - Private (2)	$	1985	57,755	56,804				
Production Cost	$	2000	62,936	61,598				
	$	2020	67,059	65,729				
8. Water Devel. Projects	$	1978	(3)	0				
Public Cost	($)	1978	(3)	0				
Private Cost	($)	1978	(3)	0				
9. Forestry Development	$	1975	(3)	-5,175				
Public Pres Worth	$	1975	(3)	-6,804				
Pvt Nt Pres Worth	$	1975	(3)	1,629				
10. Increased	Ac	1985	93	73				
Irrigation	Ac	2000	90	70				
Efficiency	Ac	2020	78	60				
11. Full Water	Ac	1985	171	158				
Supply	Ac	2000	164	152				
Irrigated	Ac	2020	162	148				
12. Land Use Change	Ac	1985	367	373				
Rangeland to	Ac	2000	358	355				
Dry Cropland	Ac	2020	358	359				
13. Land Use Change	Ac	1985	6	0				
Rangeland to	Ac	2000	0	0				
Irrigated Croplnd	Ac	2020	1	0				
14. Land Use Change	Ac	1985	6	11				
Dry Cropland to	Ac	2000	17	11				
Irrigated Croplnd	Ac	2020	20	19				
15. Rangeland with	Ac	1985	38	38				
Treatment	Ac	2000	38	38				
	Ac	2020	3,433	3,432				
16. Municipal and	AF	1985	18	18				
Industrial Water	AF	2000	18	18				
	AF	2020	18	18				
17. Agricultural	Ac	1985	91	91				
Flooding	Ac	2000	91	91				
	Ac	2020	91	91				
18. Livestock	AUM	1985	2,581	2,506				
	AUM	2000	2,560	2,560				
	AUM	2020	3,423	3,423				
19. Zero Discharge	Ac	1985	62	72				
Systems	Ac	2000	62	64				
	Ac	2020	62	64				
20. Wldrns-Backcntry Expr	RD	2020	124	51				
21. Fishing	RD	1985	1,674	2,127				
	RD	2000	2,269	2,127				
	RD	2020	3,486	2,127				
22. Big Game	RD	1985	219	195				
Hunting	RD	2000	315	195				
	RD	2020	517	195				
23. Small Game and	RD	1985	137	84				
Bird Hunting	RD	2000	206	84				
	RD	2020	374	84				
24. Boating	RD	1985	1,115	1,115				
Swimming	RD	2000	1,273	1,273				
Water Skiing	RD	2020	1,514	1,514				
25. Total Timber Harvest	MBF	1975	15,530	21,670				
26. Annual	MBF	1985	47	47				
Timber	MBF	2000	54	54				
Harvest	MBF	2020	59	59				
27. Thinning and	Acres	1985	14.6	6.9				
Planting	Acres	2000	28.0	81.9				
Accumulated	Acres	2020	44.2	118.2				

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.
(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Output from the LP were used as inputs to the I-O.
(3). Information not available.

E N V I R O N M E N T A L   Q U A L I T Y   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year:	Base-Line Future	Alt. Fut. VI
Areas of Consideration				
1. Rivers and Streams	Mi	2020:	4.4	4.4
2. Lakes and Reservoirs	Ac	2020:	71.6	71.6
3. Protectd Aquatic	Mi	1985:	316	320
Animal Habitat	Mi	2000:	318	317
	Mi	2020:	275	275
4. Protectd Terrestrial	Ac	1985:	845	845
Animal Habitat	Ac	2000:	845	845
	Ac	2020:	753	753
5. Critical	Ac	1985:	552	552
Big Game	Ac	2000:	552	552
Habitat	Ac	2020:	460	460
6. Critical	AUM	1985:	33	33
Big Game	AUM	2000:	33	33
Use	AUM	2020:	33	33
7. Wilderness Class	Ac	2020:	290	164
8. Backcountry Mgt	Ac	2020:	(1)	126
Water, Air, Land Quality				
9. Non - Point Source	AcFt	1985:	104	94
Pollutn-Irrigtn	AcFt	2000:	102	99
Return Flows	AcFt.	2020:	96	91
10. Non - Point Source	Ac	1985:	182	232
Polutn - Acres	Ac	2000:	181	223
With Flows	Ac	2020:	163	209
11. Water Erosion	Ton	1985:	5,831	5,830
Annual Total	Ton	2000:	5,803	5,798
	Ton	2020:	6,665	6,662
12. Water Erosion	Ac	1985:	5,051	5,060
Over 0.5 t/a/yr	Ac	2000:	5,102	5,108
	Ac	2020:	5,886	5,885
13. Land Treatment	Ac	1985:	607	609
Minimum	Ac	2000:	604	607
Tillage	Ac	2020:	606	609
14. Land Treatment	Ac	1985:	122	121
Wind	Ac	2000:	110	110
Strip	Ac	2020:	113	112
15. Land Treatment	Ac	1985:	209	208
Contour	Ac	2000:	285	284
Farming	Ac	2020:	105	105
16. Land Treatment	Ac	1985:	144	124
Permanent	Ac	2000:	143	117
Cover	Ac	2020:	125	107
17. Agric Land Quality	Indx	1985:	1.25	1.25
Antelope Habitat	Indx	2020:	1.36	1.36
18. Agric Land Quality	Indx	1985:	1.32	1.32
Deer Habitat	Indx	2020:	1.51	1.51
19. Agric Land Quality	Indx	1985:	1.57	1.57
Elk Habitat	Indx	2020:	1.95	1.95
20. Agric Land Quality	Indx	1985:	1.34	1.34
Grouse Habitat	Indx	2020:	1.49	1.49
21. Forestland Quality	Indx	1985:	0.92	0.92
Air Quality	Indx	2020:	0.89	0.89
22. Forestland Quality	Indx	1985:	0.86	0.86
Water Quality	Indx	2020:	0.86	0.86
23. Forestland Quality	Indx	1985:	0.88	0.88
Wildlife Quality	Indx	2020:	0.87	0.87
24. Forestland Quality	Indx	1985:	0.98	0.98
Development & Use	Indx	2020:	0.96	0.96
Irreversible Commitments				
25. Petroleum Fuel Use	Gal	1985:	(1)	21087
Annual Total	Gal	2000:	(1)	23206
Rec Ag For	Gal	2020:	(1)	25078
26. Prime Cropland Lost				
To Project	Ac	2020:	(1)	(1)
To Attrition	Ac	2020:	(1)	(1)
27. Prime Forestland Lost	Ac	2020:	(1)	(1)
28. Crit Wildlf Area Lost	Ac	2020:	(1)	(1)
29. Rivers & Streams Lost				
To Project	Mi	2020:	(1)	0
To Attrition	Mi	2020:	(1)	
30. Historic/Archeol Lost	Site	2020:	(1)	0

(1) Information not available.

REGIONAL DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. VI				
Income Effects								
1. Household Income	$	1985	164,727	161,807				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
2. Gov't Expenditures	$	1985	387,079	380,604				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
Number of Jobs								
3. Agricultural Crops	No.	1985	3.3	3.2				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
4. Livestock Industry	No.	1985	2.1	2.1				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
5. Forestry Indusry	No.	1985	0.4	0.4				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
6. All Other Sectors	No.	1985	6.9	6.9				
Permanent Jobs	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Seasonal Jobs	No.	1985	(1)	(1)				
7. Project Generatd Jobs	No.	1979	(1)	(1)				
Type of Jobs								
8. Professional & Techn	No.	1985	0.7	0.7				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
9. Managerial & Admin	No.	1985	4.4	4.3				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
10. Sales and Clerical	No.	1985	1.5	1.5				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
11. Craftmen Foremen Mec	No.	1985	1.2	1.2				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
12. Equipment Operators	No.	1985	0.9	0.9				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
13. Service Workers	No.	1985	1.6	1.6				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
14. Non-Farm Labor	No.	1985	0.7	0.7				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
15. Farm Labor & Foremen	No.	1985	1.7	1.7				
Total	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Population Effect								
16. Agricultural Crop	No.	1985	10.8	10.5				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
17. Livestock Industry	No.	1985	6.9	6.6				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
18. Forestry Industry	No.	1985	1.3	1.3				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
19. All Other Sectors	No.	1985	22.3	22.3				
Population	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				

(1) Information not available.

SOCIAL WELL-BEING ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut VI				
Household Income By Sectors								
1. Agricultural Crops Income	$	1985	62,140	52,878				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
2. Livestock Industry Income	$	1985	39,375	37,719				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
3. Forestry Industry Income	$	1985	3,198	3,200				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
4. Construction Industry Income	$	1985	5,333	5,616				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
5. Auto Dealers and Gas Stations Income	$	1985	2,055	2,070				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
6. Eating & Drinking & Lodging Places Income	$	1985	4,069	4,114				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
7. Other Retail Persons, Repair Services Income	$	1985	6,301	6,192				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
8. Governmental Services Income	$	1985	27,653	26,116				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
9. All Other Sectors	$	1985	26,297	23,902				
	$	2000	(1)	(1)				
	$	2020	(1)	(1)				
Minority & Women Employmt								
10. Professional, Techn, Admin, & Managerial	No.	1985	0.537	0.522				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
11. Sales People and Clerical Help	No.	1985	1.166	1.133				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
12. Craftsmen, Foremen & Mechanics	No.	1985	0.0 94	0.0 93				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
13. Equipment Operators	No.	1985	0.204	0.202				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
14. Service Workers	No.	1985	1.403	1.415				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
15. Non-Farm Laborers	No.	1985	0.0 87	0.0 84				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
16. Farm Labor and Foremen	No.	1985	0.315	0.284				
	No.	2000	(1)	(1)				
	No.	2020	(1)	(1)				
Life, Health, and Safety								
17. No Fld Protectn Agric	Ac	1979	(1)	(1)				
18. No Fld Protectn Urban	Ac	1979	(1)	(1)				
Loss of Future Options								
19. Crop Futures Foregone	Indx	1985	(1)	1.097				
20. Water Use F Foregone	Indx	1985	(1)	0.316				
21. Range & Wldlf F Fgone	Indx	1985	(1)	0.214				
22. Fishg & Huntg F Fgone	Indx	1985	(1)	0.000				
23. Recreatn F Foregone	Indx	1985	(1)	0.960				
24. Timber Harvst F Fgone	Indx	1985	(1)	0.000				
25. 1985 Futures Foregone	Indx	1985	(1)	2.587				
26. 2000 Futures Foregone	Indx	2000	(1)	2.797				
27. 2020 Futures Foregone	Indx	2020	(1)	4.474				
Reserve Productn Capacity								
28. Agriculturl Cropland	Ac	2020	(1)	985				
29. Livestock Production	AUM	2020	(1)	270				
30. Timber Production	MBF	2020	(1)	53				
31. Ground Water Reservoir	AF	2020	(1)	57				

(1) Information not available.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE National Economic Development - No project development

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The National Economic Development Alternative Future attempts to display the effects of adding the benefits of water development projects by providing more late season irrigation supply. The private economic incentive was used to difine a series of points along a private income/water use curve. The Basin was not constrained to producing its share of national agricultural goods. The analysis is intended to show resource capability for four evaluations: (1). No Development Project; (2). Projects in the North Platte Court Decree Area Only; (3). Projects outside the North Platte Court Decree Area Only; (4). Projects in the whole Basin. This table shows the effects of No Development Projects.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985	2000	2020 (Non-Cumulative)	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	56	51	45	-	-	-	-
	2. Acres with Return Flows	Acre	243	286	282	301	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	6,667	7,176	7,109	-	-	-	-
	4. Conservatn Land Treatmt[1/]	Acre	1,199	6,360	4,805	3,002	1,489	2,591	4,275	7,708
	5. Proper Land Use Change	Acre	0	2,622	2,705	1,569	136	1,115	1.795	3,264
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	149	113	92	209	1,648	697	12,600
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	216	217	217	113	969	287	6,988
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	180	182	213	168	1,327	562	10,148
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	5,156	5,493	6,645	494	4,449	3,351	5,548
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	290	284	302	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,462	6,596	6,662	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Hab	Mile	0.352	0.251	0.246	0.243	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	593	599	581	42	0	347	114
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	63	63	63	2	42	0	0
	21. Backcountry Management	Acre	247	48	48	48	2	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	33.2	121.9	187.5	27	9,250	256	523
TOTAL							2,935	27,243	11,824	47,252

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of NATIONAL ECONOMIC DEVELOPMENT -- No project development
Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot Note*	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,488	4,186	2,855	3,199	3,836	2,444
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	483	569	603	-200	-227	-307
3. Barley	Bushels	3	618	643	621	8,727	12,380	10,475	8,109	11,737	9,854
4. Dry Beans	Cwt.	4	234	152	96	767	842	870	533	690	774
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,310	5,934	0	21	2,002
6. Corn Silage	Tons	6	371	468	575	766	752	727	395	284	152
7. Oats	Bushels	7	1,300	1,654	2,000	14,845	14,278	10,194	13,545	12,624	8,194
8. Potatoes	Cwt.	8	570	657	735	5,207	6,878	9,169	4,637	6,221	8,434
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	6,508	7,253	7,720	2,454	2,161	2,071
10. Sugar Beets	Tons	10	478	590	755	731	825	827	253	253	72
11. Increased Irrigation Efficiency	Acres	11	93	90	78	149	113	92	56	23	14
12. North Platte Decree Irrigation	Acres	12	49	49	43	50	49	55	1	0	12
13. Irrigation Outside Decree Area	Acres	13	204	198	184	237	233	246	33	35	62
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	135,970	188,550	189.340	88,693	130.540	116,006
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	231,790	252,050	195,530	174,035	189,114	128,471
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	56	51	45	-48	-51	-51
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	286	282	301	104	101	138
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,462	6,596	6,662	1,411	1,494	776
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	951,100	1150,700	1153,800	741,100	865,700	818,800
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,156	5,493	4,886	5,118	5,455	1,453
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	290	284	302	252	246	172
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	95	95	115	19	19	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	251	246	243	-65	-72	-32
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	593	599	581	-252	-246	-172
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	63	63	63	20	20	20
45. Managed Backcountry	Acres	45	247	247	247	48	48	48	-199	-199	-199
46. Wilderness Experience	Rec-day	46	74	74	74	7.4	7.4	7.4	-66.6	-66.6	-66.6
47. Backcountry Experience	Rec-day	47	50	50	50	4.4	4.4	4.4	-45.6	-45.6	-45.6
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-20,312 Costs and returns for 100-yrs. Discount to Present 1975.					
51. State & Private Timber Harvest	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+2,085 Costs and returns for 100-yrs. Discount to Present 1975.					
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE National Economic Development - North Platte Court Decree Area Project Development

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The National Economic Development Alternative attempts to display the effects of adding the benefits of water projects by providir~ more late season irrigation supply. The private economic incentive was used to define a series of points along a private income/water use curve. The Basin was not constrained to producing its share of agricultural goods. The analysis is intended to show resource capability for four evaluations: (1). No Project Development; (2). Projects in the North Platte Court Decree Area Only; (3). Projects outside the North Platte Court Decree Area Only; and (4). Projects in the whole Basin. This table shows the effects of projects in the North Platte Court Decree Area Only.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
				(Non-Cumulative)						
Water Quality										
	1. Irrigation Return Flows	AcFt	130	64	57	51	-	-	-	-
	2. Acres with Return Flows	Acre	243	307	303	322	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	6,669	7,179	7,114	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	6,410	4,823	3,016	1,501	2,611	4,308	7,767
	5. Proper Land Use Change	Acre	0	2,624	2,711	1,569	136	1,115	1,796	3,267
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	117	113	115	164	1,294	548	9,895
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	233	234	234	135	1,159	343	8,353
Flood Protection										
	8. Agricultural Flooding	Acre	91	90	90	90	1	9	2	4
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	180	182	213	168	1,327	562	10,148
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	5,156	5,493	6,646	494	4,449	3,351	5,548
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	290	290	302	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,444	6,597	6,662	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.252	0.246	0.243	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	593	593	581	42	0	344	113
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	63	63	63	2	42	0	0
	21. Backcountry Management	Acre	247	48	48	48	2	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	33.2	121.9	187.5	27	9,250	256	523
TOTAL							2,925	27,108	11,764	45,977

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of NATIONAL ECONOMIC DEVELOPMENT -- Project Development in the North Platte Court Decree Area Only

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,476	4,186	2,937	3,187	3,836	2,526
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	483	569	603	-200	-227	-307
3. Barley	Bushels	3	618	643	621	8,519	12,380	10,475	7,901	11,737	9,854
4. Dry Beans	Cwt.	4	234	152	96	734	843	869	500	691	773
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,310	5,934	0	21	2,002
6. Corn Silage	Tons	6	371	468	575	644	752	727	273	284	152
7. Oats	Bushels	7	1,300	1,654	2,000	14,350	14,278	10,166	13,050	12,624	8,166
8. Potatoes	Cwt.	8	570	657	735	4,813	6,878	9,169	4,243	6,221	8,434
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	6,508	7,253	7,720	2,454	2,161	2,071
10. Sugar Beets	Tons	10	478	590	755	705	825	827	227	235	72
11. Increased Irrigation Efficiency	Acres	11	93	90	78	117	113	115	24	23	37
12. North Platte Decree Irrigation	Acres	12	49	49	43	70	70	75	21	21	32
13. Irrigation Outside Decree Area	Acres	13	204	198	184	237	233	246	33	35	62
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	137,390	190,240	192,050	90,113	132,230	118,716
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	233,000	253,520	197,740	175,245	190,584	130,681
16. Agriculture Land Flooding	Acres	16	91	91	91	90	90	90	-1	-1	-1
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	64	57	51	-40	-45	-45
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	307	303	322	125	122	159
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,444	6,597	6,662	1,393	1,495	776
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.7	71.7	71.7	.1	.1	.1
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	927,800	1,150,700	1,100,600	717,800	865,700	765,600
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,156	5,493	6,646	5,118	5,455	3,213
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	290	290	302	252	252	172
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	95	95	115	19	19	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	252	246	243	-64	-72	-32
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	593	593	581	-252	-252	-172
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	63	63	63	20	20	20
45. Managed Backcountry	Acres	45	247	247	247	48	48	48	-199	-199	-199
46. Wilderness Experience	Rec-day	46	74	74	74	7.4	7.4	7.4	-66.6	-66.6	-66.6
47. Backcountry Experience	Rec-day	47	50	50	50	4.4	4.4	4.4	-45.6	-45.6	-45.6
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-20,312	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+2,085	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE National Economic Development - Outside North Platte Court Decree Area Project Development

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The National Economic Development Alternative Future attempts to display the effects of adding the benefits of water development by providing more late season irrigation supply. The private economic incentive was used to define a series of points along a private income/water use curve. The Basin was not constrained to producing its share of agricultural goods. The analysis is intended to show resource capability for four evaluations: (1). No Projects; (2). Projects in the North Platte Court Decree Area Only; (3). Projects outside the North Platte Court Decree Area Only; and (4). Projects in the whole Basin. This table shows the effects of Projects outside the North Platte Court Decree Area Only.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	68	63	52	-	-	-	-
	2. Acres with Return Flows	Acre	243	328	324	343	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	6,705	7,212	7,148	-	-	-	-
	4. Conservatn Land Treatmt [1/]	Acre	1,199	6,463	4,863	3,060	1,513	2,632	4,343	7,830
	5. Proper Land Use Change	Acre	0	2,626	2,712	1,571	136	1,116	1,797	3,268
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	126	122	128	176	1,394	590	10,656
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	238	239	240	142	1,214	360	8,755
Flood Protection	8. Agricultural Flooding	Acre	91	88	88	88	1	26	6	12
Zero Discharge	9. Zero Discharge Systems	Acre	62	200	207	238	203	1,604	679	12,432
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	5,156	5,493	6,645	494	4,449	3,351	5,548
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	289	290	291	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,462	6,614	6,679	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.252	0.245	0.243	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	594	593	592	42	0	345	113
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	63	63	63	2	42	0	0
	21. Backcountry Management	Acre	247	48	48	48	2	21	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency	24. Thinning and Planting	Acre	19	33.2	121.9	187.5	27	9,250	256	523
TOTAL							2,991	27,579	11,981	49,496

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of NATIONAL ECONOMIC DEVELOPMENT -- Project Development Outside the North Platte Court Decree Area Only
Comparison of Alternative Future with National Oemands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS ANO IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	OIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,488	4,194	2,953	3,199	3,844	2,542
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	483	568	603	-200	-228	-307
3. Barley	Bushels	3	618	643	621	8,727	12,613	10,741	8,109	11,970	10,120
4. Ory Beans	Cwt.	4	234	152	96	764	876	910	530	724	814
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,318	5,927	0	29	1,995
6. Corn Silage	Tons	6	371	468	575	766	892	901	395	424	326
7. Oats	Bushels	7	1,300	1,654	2,000	14,845	14,939	11,009	13,545	13,285	9,009
8. Potatoes	Cwt.	8	570	657	735	5,207	7,468	9,955	4,637	6,811	9,220
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	6,518	7,253	7,720	2,464	2,161	2,071
10. Sugar Beets	Tons	10	478	590	755	731	854	862	253	264	107
11. Increased Irrigation Efficiency	Acres	11	93	90	78	126	122	128	33	32	50
12. North Platte Oecree Irrigation	Acres	12	49	49	43	50	49	56	1	0	13
13. Irrigation Outside Decree Area	Acres	13	204	198	184	278	275	288	74	77	104
14. Revenue, Agric., Private, Net	Oollars	14	47,277	58,010	73,334	141,130	195,160	198,610	93,853	137,150	125,276
15. Production Cost, Agric., Private	Oollars	15	57,755	62,936	67,059	236,320	257,110	201,870	178,565	194,174	134,811
16. Agriculture Land Flooding	Acres	16	91	91	91	88	88	88	-3	-3	-3
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	68	63	52	-36	-39	-44
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	328	324	343	146	143	180
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,462	6,614	6,679	1,411	1,512	793
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.7	71.7	71.7	.1	.1	.1
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	951,100	1,176,200	1,136,100	741,100	891,200	801,100
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,156	5,493	6,645	5,118	5,455	3,212
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	289	290	291	251	252	161
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	95	95	115	19	19	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	252	245	243	-64	-73	-32
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	594	593	592	-251	-252	-161
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	63	63	63	20	20	20
45. Managed Backcountry	Acres	45	247	247	247	48	48	48	-199	-199	-199
46. Wilderness Experience	Rec-day	46	74	74	74	7.4	7.4	7.4	-66.6	-66.6	-66.6
47. Backcountry Experience	Rec-day	47	50	50	50	4.4	4.4	4.4	-45.6	-45.6	-45.6
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-20,312	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+2,085	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE National Economic Development - All Projects

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The National Economic Development Alternative Future attempts to display the effects of adding the benefits of water development projects by providing more late season irrigation supply. The private economic incentive was used to define a series of points along a private income/water use curve. The Basin was not constrained to producing its share of national agricultural goods. The analysis is intended to show resource capability for four evaluations: (1). No Project Development; (2). Projects in the North Platte Court Decree Area Only; (3). Projects outside the North Platte Court Decree Area Only; and (4). Projects in the whole Basin. This table shows the effects of Projects in the whole Basin.

Platte Basin Concerns	Specific Study Objectives: Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000: USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	76	69	59	-	-	-	-
	2. Acres with Return Flows	Acre	243	348	345	363	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	6,719	7,215	7,117	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	6,513	4,880	3,074	1,525	2,653	4,376	7,889
	5. Proper Land Use Change	Acre	0	2,632	2,719	1,570	136	1,119	1,803	3,277
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	148	145	151	207	1,637	693	12,516
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	255	256	257	164	1,404	416	10,120
Flood Protection	8. Agricultural Flooding	Acre	91	87	87	87	2	34	9	16
Zero Discharge	9. Zero Discharge Systems	Acre	62	200	202	238	196	1,548	655	12,432
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	1,156	5,493	6,646	494	4,449	3,351	5,548
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	288	290	301	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	6,476	6,614	6,679	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.250	0.245	0.243	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	595	593	582	42	0	345	113
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	63	63	63	2	42	0	0
	21. Backcountry Management	Acre	247	48	48	48	2	21	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency	24. Thinning and Planting	Acre	19	33.2	121.9	187.5	27	9,250	256	523
TOTAL							3,050	27,988	12,158	52,793

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may have minimum tillage.

Effects of NATIONAL ECONOMIC DEVELEPEMENT -- All Projects
Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	3,354	4,252	3,035	3,065	3,902	2,624
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	483	569	603	-200	-227	-307
3. Barley	Bushels	3	618	643	621	8,727	12,613	10,741	8,109	11,970	10,120
4. Dry Beans	Cwt.	4	234	152	96	764	876	910	530	724	814
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,318	5,927	0	29	1,995
6. Corn Silage	Tons	6	371	468	575	767	892	910	396	424	331
7. Oats	Bushels	7	1,300	1,654	2,000	14,895	14,926	10,981	13,595	13,272	8,981
8. Potatoes	Cwt.	8	570	657	735	5,207	7,468	9,955	4,637	6,811	9,220
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	6,508	7,253	7,720	2,454	2,161	2,071
10. Sugar Beets	Tons	10	478	590	755	731	854	862	253	264	107
11. Increased Irrigation Efficiency	Acres	11	93	90	78	148	145	151	55	55	73
12. North Platte Decree Irrigation	Acres	12	49	49	43	70	70	75	21	21	32
13. Irrigation Outside Decree Area	Acres	13	204	198	184	278	275	288	74	77	104
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	142,550	196,860	201,320	95,273	138,850	127,986
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	237,530	258,580	203,680	179,775	195,644	136,621
16. Agriculture Land Flooding	Acres	16	91	91	91	87	87	87	-4	-4	-4
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	76	69	59	-28	-33	-37
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	348	345	363	166	164	200
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	6,476	6,614	6,679	1,425	1,512	793
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.8	71.8	71.8	.2	.2	.2
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	952,600	1,180,000	1,135,300	742,600	895,000	800,300
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	5,156	5,493	6,646	5,118	5,455	3,213
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	288	290	301	250	252	171
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	95	95	115	19	17	13
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,446	2,425	3,267	-19	-17	-14
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	250	245	243	-66	-73	-32
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	595	593	582	-250	-252	-171
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	63	63	63	20	20	20
45. Managed Backcountry	Acres	45	247	247	247	48	48	48	-199	-199	-199
46. Wilderness Experience	Rec-day	46	74	74	74	7.4	7.4	7.4	-66.6	-66.6	-66.6
47. Backcountry Experience	Rec-day	47	50	50	50	4.4	4.4	4.4	-45.4	-45.4	-45.4
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-20,312	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+2,085	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

NATIONAL ECONOMIC DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. NED No Projects	Alt. Fut. NED Decree Area Projects	Alt. Fut. NED Outside Decree Projects	Alt. Fut. NED All Projects
1. Agricultural Crop Sales	$	1985	114,104	398,450	391,319	398,499	401,275
2. Livestock Sales	$	1985	80,852	100,081	99,603	100,089	100,276
3. Forestry Sector Sales	$	1985	11,019	11,985	11,971	12,095	12,105
4. Service Sector Sales	$	1985	41,462	65,892	68,922	69,992	70,266
5. Total of Private Sales(1)	$	1985	336,883	810,840	804,124	824,191	828,824
6. Agriculture - Private (2)	$	1985	47,277	135,970	137,390	141,130	142,550
Net Revenue	$	2000	58,060	188,550	190,240	195,160	196,860
	$	2020	73,334	189,340	192,050	198,610	201,320
7. Agriculture - Private (2)	$	1985	57,755	231,790	233,000	236,320	237,530
Production Cost	$	2000	62,936	252,050	253,520	257,110	258,580
	$	2020	67,059	195,530	197,740	201,870	203,680
8. Water Devel. Projects	$	1978	(3)	0	16,372	34,797	51,169
Public Cost	($)	1978	(3)	0	8,186	17,398	25,584
Private Cost	($)	1978	(3)	0	8,186	17,399	25,585
9. Forestry Development	$	1975	(3)	-18,780	-18,780	-18,780	-18,780
Public Pres Worth	$	1975	(3)	-20,502	-20,502	-20,502	-20,502
Pvt Nt Pres Worth	$	1975	(3)	+1,722	+1,722	+1,722	+1,722
10. Increased	Ac	1985	93	149	117	126	148
Irrigation	Ac	2000	90	113	113	122	145
Efficiency	Ac	2020	78	92	115	128	151
11. Full Water	Ac	1985	171	216	233	238	255
Supply	Ac	2000	164	217	234	239	256
Irrigated	Ac	2020	162	217	234	240	257
12. Land Use Change	Ac	1985	367	2,591	2,593	2,589	2,590
Rangeland to	Ac	2000	358	2,684	2,684	2,687	2,689
Dry Cropland	Ac	2020	358	1.546	1,540	1,543	1,536
13. Land Use Change	Ac	1985	6	15	13	18	17
Rangeland to	Ac	2000	0	20	20	17	15
Irrigated Croplnd	Ac	2020	1	17	22	19	26
14. Land Use Change	Ac	1985	6	16	18	18	25
Dry Cropland to	Ac	2000	17	1	7	8	15
Irrigated Croplnd	Ac	2020	20	6	7	9	8
15. Rangeland with	Ac	1985	38	5,156	5,156	5,156	5,156
Treatment	Ac	2000	38	5,493	5,493	5,493	5,493
	Ac	2020	3,433	6,645	6,646	6,645	6,646
16. Municipal and	AF	1985	18	18	18	18	18
Industrial Water	AF	2000	18	18	18	18	18
	AF	2020	18	18	18	18	18
17. Agricultural	Ac	1985	91	91	90	88	87
Flooding	Ac	2000	91	91	90	88	87
	Ac	2020	91	91	90	88	87
18. Livestock	AUM	1985	2,581	2,581	2,581	2,581	2,581
	AUM	2000	2,560	2,560	2,560	2,560	2,560
	AUM	2020	3,423	3,423	3,423	3,423	3,423
19. Zero Discharge	Ac	1985	62	180	180	200	200
Systems	Ac	2000	62	182	182	207	202
	Ac	2020	62	213	213	238	238
20. Wldrns-Backcntry Expr	RD	2020	124	11.8	11.8	11.8	11.8
21. Fishing	RD	1985	1,674	2,127	2,127	2,127	2,127
	RD	2000	2,269	2,127	2,127	2,127	2,127
	RD	2020	3,486	2,127	2,127	2,127	2,127
22. Big Game	RD	1985	219	195	195	195	195
Hunting	RD	2000	315	195	195	195	195
	RD	2020	517	195	195	195	195
23. Small Game and	RD	1985	137	84	84	84	84
Bird Hunting	RD	2000	206	84	84	84	84
	RD	2020	374	84	84	84	84
24. Boating	RD	1985	1,115	1,115	1,115	1,115	1,115
Swimming	RD	2000	1,273	1,273	1,273	1,273	1,273
Water Skiing	RD	2020	1,514	1,514	1,514	1,514	1,514
25. Total Timber Harvest	MBF	1975	15,530	25,530	25,530	25,530	25,530
26. Annual	MBF	1985	47	47	47	47	47
Timber	MBF	2000	54	54	54	54	54
Harvest	MBF	2020	59	59	59	59	59
27. Thinning and	Acres	1985	14.6	33.2	33.2	33.2	33.2
Planting	Acres	2000	28.0	121.9	121.9	121.9	121.9
Accumulated	Acres	2020	44.2	187.5	187.5	187.5	187.5

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.

(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Output from the LP were used as inputs to the I-O.

(3). Information not available.

E N V I R O N M E N T A L   Q U A L I T Y   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. NED No Projects	Alt. Fut. NED Decree Area Projects	Alt. Fut. NED Outside Decree Projects	Alt. Fut. NED All Projects
Areas of Consideration							
1. Rivers and Streams	Mi	2020	4.4	4.4	4.4	4.4	4.4
2. Lakes and Reservoirs	Ac	2020	71.6	71.6	71.7	71.7	71.8
3. Protected Aquatic	Mi	1985	316	251	252	252	250
Animal	Mi	2000	318	246	246	245	245
Habitat	Mi	2020	275	243	243	243	243
4. Protected Terrestrial	Ac	1985	845	593	593	594	595
Animal	Ac	2000	845	599	593	593	593
Habitat	Ac	2020	753	581	581	592	582
5. Critical	Ac	1985	552	300	300	301	302
Big Game	Ac	2000	552	306	300	300	300
Habitat	Ac	2020	460	288	288	299	289
6. Critical	AUM	1985	33	33	33	33	33
Big Game	AUM	2000	33	33	29	33	33
Use	AUM	2020	33	33	33	33	33
7. Wilderness Class	Ac	2020	290	63	63	63	63
8. Backcountry Mgt	Ac	2020	(1)	48	48	48	48
Water, Air, Land Quality							
9. Non - Point Source	AcFt	1985	104	56	64	68	76
Pollutn-Irrigtn	AcFt	2000	102	51	57	63	69
Return Flows	AcFt.	2020		45	51	52	59
10. Non - Point Source	Ac	1985	182	286	307	328	348
Polutn - Acres	Ac	2000	181	282	303	324	345
With Flows	Ac	2020	163	301	322	343	363
11. Water Erosion	Ton	1985	5,831	6,667	6,669	6,705	6,719
Annual Total	Ton	2000	5,803	7,176	7,179	7,212	7,215
	Ton	2020	6,665	7,109	7,114	7,148	7,153
12. Water Erosion	Ac	1985	5,051	6,462	6,444	6,462	6,476
Over 0.5 t/a/yr	Ac	2000	5,102	6,596	6,597	6,614	6,614
	Ac	2020	5,886	6,662	6,662	6,679	6,679
13. Land Treatment	Ac	1985	607	3,467	3,467	3,494	3,494
Minimum	Ac	2000	604	3,561	3,555	3,591	3,585
Tillage	Ac	2020	606	2,413	2,407	2,447	2,440
14. Land Treatment	Ac	1985	122	278	278	278	278
Wind	Ac	2000	110	289	289	289	289
Strip	Ac	2020	113	287	287	287	287
15. Land Treatment	Ac	1985	209	2,553	2,588	2,619	2,654
Contour	Ac	2000	285	881	884	902	904
Farming	Ac	2020	105	208	208	230	230
16. Land Treatment	Ac	1985	144	62	77	72	87
Permanent	Ac	2000	143	74	95	81	102
Cover	Ac	2020	125	94	114	96	117
17. Agric Land Quality	Indx	1985	1.25	1.21	1.21	1.21	1.21
Antelope Habitat	Indx	2020	1.36	1.32	1.32	1.32	1.32
18. Agric Land Quality	Indx	1985	1.32	1.43	1.43	1.43	1.43
Deer Habitat	Indx	2020	1.51	1.52	1.52	1.52	1.52
19. Agric Land Quality	Indx	1985	1.57	1.89	1.89	1.89	1.89
Elk Habitat	Indx	2020	1.95	2.03	2.03	2.03	2.03
20. Agric Land Quality	Indx	1985	1.34	1.61	1.61	1.61	1.61
Grouse Habitat	Indx	2020	1.49	1.64	1.64	1.64	1.64
21. Forestland Quality	Indx	1985	0.92	0.89	0.89	0.89	0.89
Air Quality	Indx	2020	0.89	0.84	0.84	0.84	0.84
22. Forestland Quality	Indx	1985	0.86	0.91	0.91	0.91	0.91
Water Quality	Indx	2020	0.86	0.90	0.90	0.90	0.90
23. Forestland Quality	Indx	1985	0.88	0.91	0.91	0.91	0.91
Wildlife Quality	Indx	2020	0.87	0.85	0.85	0.85	0.85
24. Forestland Quality	Indx	1985	0.98	0.91	0.91	0.91	0.91
Development & Use	Indx	2020	0.96	0.86	0.86	0.86	0.86
Irreversible Commitments							
25. Petroleum Fuel Use	Gal	1985	(1)	50692	50087	50691	49899
Annual Total	Gal	2000	(1)	57917	57918	58611	58962
Rec Ag For	Gal	2020	(1)	50223	50706	51611	52107
26. Prime Cropland Lost							
To Project	Ac	2020	(1)	(1)	(1)	(1)	(1)
To Attrition	Ac	2020	(1)	(1)	(1)	(1)	(1)
27. Prime Forestland Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
28. Crit Wildlf Area Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
29. Rivers & Streams Lost							
To Project	Mi	2020	(1)	0	0	0	0
To Attrition	Mi	2020	(1)	(1)	(1)	(1)	(1)
30. Historic/Archeol Lost	Site	2020	(1)	0	0	0	0

(1). Information not available.

REGIONAL DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. NED No Projects	Alt. Fut. NED Decree Area Projects	Alt. Fut. NED Outside Decree Projects	Alt. Fut. NED All Projects
Income Effects							
1. Household Income	$	1985	164,727	389,331	386,446	394,857	397,063
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
2. Gov't Expenditures	$	1985	387,079	931,658	923,940	946,997	952,321
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
Number of Jobs							
3. Agricultural Crops	No.	1985	3.3	11.4	11.2	11.4	11.5
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
4. Livestock Industry	No.	1985	2.1	2.6	2.6	2.6	2.6
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
5. Forestry Indusry	No.	1985	0.4	0.4	0.4	0.4	0.4
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
6. All Other Sectors	No.	1985	6.9	12.3	12.6	13.1	13.1
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
7. Project Generatd Jobs	No.	1979	(1)	(1)	(1)	(1)	(1)
Type of Jobs							
8. Professional & Techn	No.	1985	0.7	1.5	1.5	1.6	1.6
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
9. Managerial & Admin	No.	1985	4.4	10.2	10.2	10.3	10.4
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
10. Sales and Clerical	No.	1985	1.5	2.8	2.8	2.9	2.9
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
11. Craftmen Foremen Mec	No.	1985	1.2	2.7	2.7	2.9	2.9
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
12. Equipment Operators	No.	1985	0.9	1.7	1.7	1.8	1.8
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
13. Service Workers	No.	1985	1.6	1.9	2.1	2.1	2.1
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
14. Non-Farm Labor	No.	1985	0.7	1.5	1.5	1.5	1.5
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
15. Farm Labor & Foremen	No.	1985	1.7	4.4	4.3	4.4	4.4
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Population Effect							
16. Agricultural Crop	No.	1985	10.8	37.0	36.4	37.0	37.3
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
17. Livestock Industry	No.	1985	6.9	8.5	8.4	8.5	8.5
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
18. Forestry Industry	No.	1985	1.3	1.4	1.4	1.4	1.4
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
19. All Other Sectors	No.	1985	22.3	39.6	40.6	42.2	42.3
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)

(1). Information not available.

S O C I A L   W E L L - B E I N G   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. NED No Projects	Alt. Fut. NED Decree Area Projects	Alt. Fut. NED Outside Oecre Projects	Alt. Fut. NED All Projects
Household Income By Sectors							
1. Agricultural Crops Income	$	1985	62,140	187,188	183,849	187,216	188,516
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
2. Livestock Industry Income	$	1985	39,375	47,988	47,760	47,993	48,082
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
3. Forestry Industry Income	$	1985	3,198	3,481	3,477	3,517	3,515
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
4. Construction Industry Income	$	1985	5,333	14,066	13,951	15,327	15,405
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
5. Auto Dealers and Gas Stations Income	$	1985	2,055	2,495	2,865	2,899	2,907
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
6. Eating & Drinking & Lodging Places Income	$	1985	4,069	4,039	4,260	4,268	4,269
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
7. Other Retail Persons, Repair Services Income	$	1985	6,301	9,651	10,292	10,497	10,536
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
8. Governmental Services Income	$	1985	27,653	55,435	55,605	57,066	57,354
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
9. All Other Sectors	$	1985	26,297	64,988	64,387	66,078	66,479
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
Minority & Women Employmt							
10. Professional, Techn, Admin, & Managerial	No.	1985	0.537	0.863	0.882	0.901	0.904
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
11. Sales People and Clerical Help	No.	1985	1.166	1.933	1.983	2.028	2.037
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
12. Craftsmen, Foremen & Mechanics	No.	1985	0.094	0.193	0.196	0.207	0.207
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
13. Equipment Operators	No.	1985	0.204	0.317	0.335	0.344	0.345
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1
14. Service Workers	No.	1985	1.403	1.526	1.661	1.674	1.675
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
15. Non-Farm Laborers	No.	1985	0.087	0.179	0.179	0.185	0.186
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
16. Farm Labor and Foremen	No.	1985	0.315	0.679	0.669	0.679	0.683
	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Life, Health, and Safety							
17. No Fld Protectn Agric	Ac	1979	(1)	(1)	(1)	(1)	(1)
18. No Fld Protectn Urban	Ac	1979	(1)	(1)	(1)	(1)	(1)
Loss of Future Options							
19. Crop Futures Foregone	Indx	1985	(1)	0.000	0.000	0.000	0.000
20. Water Use F Foregone	Indx	1985	(1)	0.000	0.000	0.000	0.000
21. Range & Wldlf F Fgone	Indx	1985	(1)	1.858	1,853	1.844	1.438
22. Fishg & Huntg F Fgone	Indx	1985	(1)	0.000	0.000	0.000	0.000
23. Recreatn F Foregone	Indx	1985	(1)	5.873	5.873	5.873	5.873
24. Timber Harvst F Fgone	Indx	1985	(1)	0.000	0.000	0.000	0.000
25. 1985 Futures Foregone	Indx	1985	(1)	7.731	7.726	7.717	7.311
26. 2000 Futures Foregone	Indx	2000	(1)	7.727	7.898	7.786	7.329
27. 2020 Futures Foregone	Indx	2020	(1)	7.890	7.890	7.786	7.432
Reserve Productn Capacity							
28. Agriculturl Cropland	Ac	2020	(1)	397	382	360	347
29. Livestock Production	AUM	2020	(1)	0	0	0	0
30. Timber Production	MBF	2020	(1)	53	53	53	53
31. Ground Water Reservoir	AF	2020	(1)	0	0	0	0

(1). Information not available.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE Environmental Quality - No Reduction In Erosion

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The Environmental Quality Alternative Future attempts to display the effect of reducing the levels of soil erosion on resource use and income. The Basin's agricultural production is not to exceed its national share of agricultural goods. Evaluations were made for: (1). 10 percent reduction in erosion; (2). 20 percent reduction in erosion; and (3). 30 percent reduction in erosion. This table shows the effect of no reduction in erosion.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality	1. Irrigation Return Flows	AcFt	130	104	102	96	-	-	-	-
	2. Acres with Return Flows	Acre	243	182	181	163	-	-	-	-
Erosion and Sedimentation	3. Water Erosion Annl Total	Tons	5,513	5,831	5,803	6,665	-	-	-	-
	4. Conservatn Land Treatmt [1/]	Acre	1,199	1,082	1,142	949	263	457	754	1,359
	5. Proper Land Use Change	Acre	0	379	375	379	19	154	248	450
Irrigation Efficiency	6. Increasd Irrgtn Efficncy	Acre	0	93	90	78	126	995	421	7,611
Irrigation Water Development	7. Full Wtr Supply - Irrgted	Acre	130	171	164	162	44	379	112	2,731
Flood Protection	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge	9. Zero Discharge Systems	Acre	62	70	70	70	11	88	37	677
Rangeland Use	10. Rngland w/ Added Treatmt	Acre	0	38	38	3,433	3	31	23	38
Big Game Competition	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	130	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	5,051	5,102	5,886	-	-	-	-
Rare, Threatened, and Endangered Species	15. Protectd Aquatic Animal Habt	Mile	0.352	0.316	0.318	0.275	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	753	59	0	490	161
Water Recreation Use	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas	20. Wilderness Classifictn	Acre	43	164	164	164	10	103	0	0
	21. Backcountry Management	Acre	247	126	126	126	3	26	0	0
Flat Water Visual Quality	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity	23. Annual Timber Harvest	MBF	40	47	54	59	249	5,817	204	136
Timber Management Efficiency	24. Thinning and Planting	Acre	19	6.9	81.9	118.2	18	6,215	172	351
TOTAL							806	14,279	2,505	13,747

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ENVIRONMENTAL QUALITY -- No Reduction in Erosion

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	487	569	598	-196	-227	-312
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	327	338	0	-141	-237
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	309	416	449	-169	-174	-306
11. Increased Irrigation Efficiency	Acres	11	93	90	78	93	90	78	0	0	0
12. North Platte Decree Irrigation	Acres	12	49	49	43	49	49	43	0	0	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	204	198	184	0	0	0
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	47,277	58,010	73,334	0	0	0
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	57,755	62,936	67,059	0	0	0
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	104	102	96	0	0	0
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	182	181	163	0	0	0
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	5,051	5,102	5,886	0	0	0
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,541	2,520	3,383	0	0	0
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	38	38	3,433	0	0	0
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	130	0	0	0
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	76	78	102	0	0	0
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,465	2,442	3,281	0	0	0
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	316	318	275	0	0	0
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	753	0	0	0
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	+479	+101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	164	164	164	121	121	121
45. Managed Backcountry	Acres	45	247	247	247	126	126	126	-121	-121	-121
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-6,658	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+1,993	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE Environmental Quality - 10 Percent Reduction In Erosion

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The Environmental Quality Alternative Future attempts to display the effect of reducing the levels of soil erosion on resource use and income. The Basin's agricultural production is not to exceed its national share of agricultural goods. Evaluations were made for: (1). 10 percent reduction in erosion; (2). 20 percent reduction in erosion; and (3). 30 percent reduction in erosion. This table shows the effect of 10 percent reduction in erosion.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	104	109	100	-	-	-	-
	2. Acres with Return Flows	Acre	243	260	244	225	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	5,248	5,223	5,028	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	1,121	1,137	947	272	473	780	1,409
	5. Proper Land Use Change	Acre	0	268	358	363	18	148	240	437
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	90	85	79	126	995	421	7,611
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	179	166	164	64	546	162	3,936
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	74	74	74	17	133	56	1,015
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	55	55	5,626	5	45	34	56
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	121	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	3,885	3,942	4,289	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.419	0.412	0.338	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	762	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	178	178	178	8	105	0	0
	21. Backcountry Management	Acre	247	112	112	112	2	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	7.2	17.4	17.4	4	1,320	37	75
TOTAL							828	9,617	2,474	15,059

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ENVIRONMENTAL QUALITY -- 10 Percent Reduction in Erosion

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	BASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	490	554	587	-193	-242	-323
3. Barley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Dry Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	327	332	0	-141	-243
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar Beets	Tons	10	478	590	755	308	438	465	-170	-152	-290
11. Increased Irrigation Efficiency	Acres	11	93	90	78	90	85	79	-3	-5	1
12. North Platte Decree Irrigation	Acres	12	49	49	43	49	49	43	0	0	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	211	196	182	7	-2	-2
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	46,527	57,249	72,490	-750	-761	-844
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	57,681	62,607	66,939	-74	-329	-120
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	104	109	100	0	7	4
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	260	244	225	78	63	62
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	3,885	3,942	4,919	-1,166	-1,160	-967
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,413	2,395	3,288	-128	-125	-95
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	55	55	56	17	17	-3,377
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	121	0	0	-9
31. Critical Areas - Big Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	57	57	81	-19	-19	-21
33. Non-Crit. Area - Big Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,356	2,338	3,207	-109	-104	-74
35. Critical Big Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	419	412	338	103	94	63
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	762	0	0	9
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & Bird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. Boating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	178	178	178	135	135	135
45. Managed Backcountry	Acres	45	247	247	247	112	112	112	-135	-135	-135
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	Board-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	Board-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-8,378 Costs and returns for 100-yrs. Discount to Present, 1975					
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+2,085 Costs and returns for 100-yrs. Discount to Present, 1975					
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE Environmental Quality - 20 Percent Reduction in Erosion

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The Environmental Quality Alternative Future displays the effect of reducing the levels of soil erosion on resource use and income. The Basin's agricultural production is not to exceed its national share of agricultural goods. This table shows the effect of 20 percent reduction in erosion.

Platte Basin Concerns	Specific Study Objectives Unit of Measure	Unit 1000	Present Situation	Time Frame (Non-Cumulative) 1985	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality										
	1. Irrigation Return Flows	AcFt	130	104	109	100	-	-	-	-
	2. Acres with Return Flows	Acre	243	260	244	225	-	-	-	-
Erosion and Sedimentation										
	3. Water Erosion Annl Total	Tons	5,513	4,665	4,642	5,332	-	-	-	-
	4. Conservatn Land Treatmt 1/	Acre	1,199	1,121	1,137	949	272	473	780	1,409
	5. Proper Land Use Change	Acre	0	286	358	373	18	148	240	437
Irrigation Efficiency										
	6. Increasd Irrgtn Efficncy	Acre	0	90	88	79	126	995	421	7,611
Irrigation Water Development										
	7. Full Wtr Supply - Irrgted	Acre	130	179	166	164	64	546	162	3,936
Flood Protection										
	8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge										
	9. Zero Discharge Systems	Acre	62	74	74	74	17	133	56	1,015
Rangeland Use										
	10. Rngland w/ Added Treatmt	Acre	0	55	55	4,526	5	45	34	56
Big Game Competition										
	11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production										
	12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	72	-	-	-	-
	13. Crit Area Big Game Use	AUM	33	33	33	33	0	0	38	216
Fish Habitat										
	14. Water Erosn Over 0.5 t/a/y	Acre	4,604	3,231	3,336	3,913	-	-	-	-
Rare, Threatened, and Endangered Species										
	15. Protectd Aquatic Animal Habt	Mile	0.352	0.500	0.486	0.415	-	-	-	-
	16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	811	59	0	490	161
Water Recreation Use										
	17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access										
	18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
	19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas										
	20. Wilderness Classifictn	Acre	43	178	178	178	8	105	0	0
	21. Backcountry Management	Acre	247	112	112	112	2	21	0	0
Flat Water Visual Quality										
	22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity										
	23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency										
	24. Thinning and Planting	Acre	19	7.2	17.4	17.4	4	1,320	37	75
TOTAL							828	9,617	2,474	15,059

1/ The Conservation Land Treatment area may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ENVIRONMENTAL QUALITY -- 20 Percent Reduction in Erosion

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	8ASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	490	554	587	-193	-242	-323
3. 8arley	Bushels	3	618	643	621	618	643	621	0	0	0
4. Ory Beans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	Bushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	327	332	0	-141	-243
7. Oats	Bushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	Bushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar 8eets	Tons	10	478	590	755	308	438	464	-170	-152	-291
11. Increased Irrigation Efficiency	Acres	11	93	90	78	90	88	79	-3	-2	1
12. North Platte Oecree Irrigation	Acres	12	49	49	43	49	49	43	0	0	0
13. Irrigation Outside Oecree Area	Acres	13	204	198	184	211	196	182	7	-2	-2
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	45,330	56,058	70,991	-1,947	-1,952	-2,343
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	56,916	61,832	65,898	-839	-1,104	-1,161
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	104	109	100	0	7	4
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	260	244	225	78	63	62
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	3,231	3,336	3,913	-1,820	-1,766	-1,973
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,271	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	2,158	2,139	2,958	-383	-381	-425
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	55	55	4,526	17	17	4,488
30. Critical BG Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	72	0	0	-58
31. Critical Areas - 8ig Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	78	102	52	52	67	-24	-26	-35
33. Non-Crit. Area - 8ig Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	2,106	2,087	2,890	-359	-355	-391
35. Critical 8ig Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	500	486	415	184	168	140
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	811	0	0	58
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. Big Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & 8ird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. 8oating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Oesignated Wilderness	Acres	44	43	43	43	178	178	178	135	135	135
45. Managed Backcountry	Acres	45	247	247	247	112	112	112	-135	-135	-135
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. Backcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	8oard-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	8oard-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-8,378	Costs and returns for 100-yrs. Discount to Present 1975.				
51. State & Private Timber Harvets	Board-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+2,085	Costs and returns for 100-yrs. Discount to Present 1975.				
53. Lumber Produced, Lumber Scale	Board-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

SYNOPSIS AND COMMITMENTS FOR
ALTERNATIVE FUTURE Environmental Quality - 30 Percent Reduction in Erosion

Platte River Basin, Wyoming

A Summary of Necessary Commitments and Anticipated Changes

Synopsis: The Environmental Quality Alternative Future attempts to display the effect of reducing the levels of soil erosion on resource use and income. The Basin's agricultural production is not to exceed its national share of agricultural goods. Evaluations were made for: (1). 10 percent reduction in erosion; (2). 20 percent reduction in erosion; and (3). 30 percent reduction in erosion. This table shows the effect of 30 percent reduction in erosion.

Platte Basin Concerns / Specific Study Objectives / Unit of Measure	Unit 1000	Present Situation	Time Frame 1985 (Non-Cumulative)	2000	2020	Necessary Commitments to 2000 USDA Man-Years	USDA Progm $1000	STATE Progm $1000	LOCAL Progm $1000
Water Quality									
1. Irrigation Return Flows	AcFt	130	104	109	100	-	-	-	-
2. Acres with Return Flows	Acre	243	260	244	225	-	-	-	-
Erosion and Sedimentation									
3. Water Erosion Annl Total	Tons	5,513	4,082	4,062	4,665	-	-	-	-
4. Conservatn Land Treatmt [1/]	Acre	1,199	1,171	1,137	949	272	473	780	1,409
5. Proper Land Use Change	Acre	0	286	366	373	19	152	240	447
Irrigation Efficiency									
6. Increasd Irrgtn Efficncy	Acre	0	90	88	79	126	995	421	7,611
Irrigation Water Development									
7. Full Wtr Supply - Irrgted	Acre	130	179	166	164	64	546	162	3,936
Flood Protection									
8. Agricultural Flooding	Acre	91	91	91	91	0	0	0	0
Zero Discharge									
9. Zero Discharge Systems	Acre	62	74	74	74	17	133	56	1,015
Rangeland Use									
10. Rngland w/ Added Treatmt	Acre	0	55	55	3,586	5	45	34	56
Big Game Competition									
11. Non-Critical Area BG Use	AUM	39	39	39	39	-	-	-	-
Winter Range Production									
12. Crit Area Imprvd Rng Mgt	Acre	0	38	38	75	-	-	-	-
13. Crit Area Big Game Use	AUM	33	0	0	0	0	0	38	216
Fish Habitat									
14. Water Erosn Over 0.5 t/a/y	Acre	4,604	2,908	2,958	3,245	-	-	-	-
Rare, Threatened, and Endangered Species									
15. Protectd Aquatic Animal Habt	Mile	0.352	0.646	0.549	0.500	-	-	-	-
16. Protectd Terrestrial Animal Habitat	Acre	883	845	845	808	59	0	490	161
Water Recreation Use									
17. Boat, Swim, Wtr Skiing	RD	1,021	1,115	1,273	1,514	1	14	6	17
Public Access									
18. Guaranteed Fishg Access	RD	2,127	2,127	2,127	2,127	-	-	-	-
19. Guaranteed Huntg Access	RD	280	280	280	280	-	-	-	-
Wilderness Areas									
20. Wilderness Classifictn	Acre	43	178	178	178	8	105	0	0
21. Backcountry Management	Acre	247	112	112	112	2	21	0	0
Flat Water Visual Quality									
22. Restricted Wtr Drawdown	Acre	5.3	5.3	5.3	5.3	-	-	-	-
Supply Sawmill Capacity									
23. Annual Timber Harvest	MBF	40	47	54	59	252	5,817	210	126
Timber Management Efficiency									
24. Thinning and Planting	Acre	19	7.2	17.4	17.4	4	1,320	37	75
TOTAL						829	9,621	2,474	15,069

1/ The Conservation Land Treatment may include some spatial acres that receive more than one type of treatment, such as terraced land may also have minimum tillage.

Effects of ENVIRONMENTAL QUALITY -- 30 Percent Reduction in Erosion

Comparison of Alternative Future with National Demands and Resource Constraints
Platte River 8asin, Wyoming

OUTPUTS AND IMPACTS	Units	Foot* Note	8ASELINE FUTURE Thousands - Noncumulative 1985	2000	2020	ALTERNATIVE FUTURE Thousands - Noncumulative 1985	2000	2020	DIFFERENCE OR RELATIONSHIP Thousands - Noncumulative 1985	2000	2020
1. Alfalfa Hay	Tons	1	289	350	411	289	350	411	0	0	0
2. Native Hay & Pasture Equiv.	Tons	2	683	796	910	490	554	587	-193	-242	-323
3. 8arley	8ushels	3	618	643	621	618	643	621	0	0	0
4. Dry 8eans	Cwt.	4	234	152	96	234	152	96	0	0	0
5. Corn	8ushels	5	2,332	3,289	3,932	2,332	3,289	3,932	0	0	0
6. Corn Silage	Tons	6	371	468	575	371	327	332	0	-141	-243
7. Oats	8ushels	7	1,300	1,654	2,000	1,300	1,654	2,000	0	0	0
8. Potatoes	Cwt.	8	570	657	735	570	657	735	0	0	0
9. Wheat & Rye	8ushels	9	4,054	5,092	5,649	4,054	5,092	5,649	0	0	0
10. Sugar 8eets	Tons	10	478	590	755	308	438	465	-170	-152	-290
11. Increased Irrigation Efficiency	Acres	11	93	90	78	90	88	79	-3	-2	1
12. North Platte Decree Irrigation	Acres	12	49	49	43	49	49	43	0	0	0
13. Irrigation Outside Decree Area	Acres	13	204	198	184	211	196	183	7	-2	-1
14. Revenue, Agric., Private, Net	Dollars	14	47,277	58,010	73,334	43,998	54,740	69,270	-3,279	-3,270	-4,064
15. Production Cost, Agric., Private	Dollars	15	57,755	62,936	67,059	56,078	61,000	64,726	-1,677	-1,936	-2,333
16. Agriculture Land Flooding	Acres	16	91	91	91	91	91	91	0	0	0
17. Urban Flooding	Acres	17	2	2	2	2	2	2	0	0	0
18. Municipal & Industrial Water	Acre-ft.	18	18	18	18	18	18	18	0	0	0
19. Irrigation Return Flows	Acre-ft.	19	104	102	96	104	109	100	0	7	4
20. Acres with Irrgtn Return Flows	Acres	20	182	181	163	260	244	225	78	63	62
21. Surface Erosion, 0.5 t/a/y plus	Acres	21	5,051	5,102	5,886	2,908	2,958	3,245	-2,143	-2,144	-2,641
22. Fisheries, River & Stream	Miles	22	4.4	4.4	4.4	4.4	4.4	4.4	0	0	0
23. Fisheries, Lake & Reservoirs	Acres	23	71.6	71.6	71.6	71.6	71.6	71.6	0	0	0
24. Guaranteed Fishing Access	Rec-day	24	2,127	2,127	2,127	2,127	2,127	2,127	0	0	0
25. Guaranteed Hunting Access	Rec-day	25	280	280	280	280	280	280	0	0	0
26. Non Forest Range Livestock	AUM	26	2,541	2,520	3,383	1,876	1,860	2,583	-665	-660	-800
27. Nat'l. Forest Range Livestock	AUM	27	40	40	40	40	40	40	0	0	0
28. Feed Grain Requirements, Feed Unit	F.U.	28	210,000	285,000	335,000	210,000	285,000	335,000	0	0	0
29. Rangeland with Added Treatment	Acres	29	38	38	3,433	55	55	3,586	17	17	153
30. Critical 8G Area Imprvd. Rng. Mgt.	Acres	30	38	38	130	38	38	75	0	0	-55
31. Critical Areas - 8ig Game Use	AUM	31	33	33	33	33	33	33	0	0	0
32. Critical Areas - Livestock Use	AUM	32	76	76	102	42	42	55	-34	-34	21
33. Non-Crit. Area - 8ig Game Use	AUM	33	39	39	39	39	39	39	0	0	0
34. Non-Crit. Area - Livestock Use	AUM	34	2,465	2,442	3,281	1,834	1,819	2,527	-631	-623	-754
35. Critical 8ig Game Area	Acres	35	590	590	590	590	590	590	0	0	0
36. Protectd Aquatic Animal Species	Miles	36	316	318	275	556	549	500	240	231	225
37. Protectd Terrestrial Animal Species	Acres	37	845	845	753	845	845	808	0	0	55
38. Lakes & Reservoirs Surface	Acres	38	72	72	72	72	72	72	0	0	0
39. Flat Water Fishing	Rec-day	39	1,062	1,440	2,212	1,541	1,541	1,541	479	101	-671
40. River & Stream Fishing	Rec-day	40	612	829	1,274	586	586	586	-26	-243	-688
41. 8ig Game Hunting	Rec-day	41	219	315	517	195	195	195	-24	-120	-322
42. Small Game & 8ird Hunting	Rec-day	42	137	206	374	84	84	84	-53	-122	-290
43. 8oating, Swimming, & Water Skiing	Rec-day	43	1,021	1,021	1,021	1,115	1,273	1,514	94	252	493
44. Designated Wilderness	Acres	44	43	43	43	178	178	178	135	135	135
45. Managed 8ackcountry	Acres	45	247	247	247	112	112	112	-135	-135	-135
46. Wilderness Experience	Rec-day	46	74	74	74	31	31	31	-43	-43	-43
47. 8ackcountry Experience	Rec-day	47	50	50	50	20	20	20	-30	-30	-30
48. Total Timber Harvest, All Owners	8oard-ft.	48	47,000	54,000	59,000	47,000	54,000	59,000	0	0	0
49. National Forest Timber Harvest	8oard-ft.	49	38,500	44,280	48,380	38,500	44,280	48,380	0	0	0
50. National Forest Net Present Worth	Dollars	50	--	--	--	-8,378 Costs and returns for 100-yrs. Discount to Present, 1975					
51. State & Private Timber Harvets	8oard-ft.	51	6,580	7,560	8,260	6,580	7,560	8,260	0	0	0
52. State & Private Net Present Worth	Dollars	52	--	--	--	+2,085 Costs and returns for 100-yrs. Discount to Present, 1975					
53. Lumber Produced, Lumber Scale	8oard-ft.	53	67,300	74,100	77,800	82,250	94,500	103,000	14,950	20,400	25,200

*Detailed explanation of Footnotes can be found in Tables 2-6 through 2-9, Chapter 2 of this report.

N A T I O N A L   E C O N O M I C   D E V E L O P M E N T   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. EQ No Reduction in Erosion	Alt. Fut. EQ 10% Reduc. Erosion	Alt. Fut. EQ 20% Reduc. Erosion	Alt. Fut. EQ 30% Reduc. Erosion
1. Agricultural Crop Sales	$	1985:	114,104	114,104	113,162	110,954	108,593
2. Livestock Sales	$	1985:	80,852	80,852	77,261	69,872	61,730
3. Forestry Sector Sales	$	1985:	11,019	11,019	11,041	10,658	11,030
4. Service Sector Sales	$	1985:	41,462	41,462	41,303	39,416	40,191
5. Total of Private Sales(1)	$	1985:	336,883	336,883	333,187	390,965	308,125
6. Agriculture - Private	$	1985:	47,277	47,277	46,527	45,330	43,998
Net Revenue	$	2000:	58,060	58,010	57,249	56,058	54,740
(2)	$	2020:	73,334	73,334	72,490	70,991	69,270
7. Agriculture - Private	$	1985:	57,755	57,755	57,681	56,916	56,078
Production Cost (2)	$	2000:	62,936	62,936	62,607	61,832	61,000
	$	2020:	67,059	67,059	66,939	65,898	64,726
8. Water Devel. Projects	$	1978:	(3)	0	0	0	0
Public Cost	($)	1978:	(3)	0	0	0	0
Private Cost	($)	1978:	(3)	0	0	0	0
9. Forestry Development	$	1975:		-5,575	-6,914	-6,914	-6,914
Public Pres Worth	$	1975:		-6,804	-8,472	-8,472	-8,472
Pvt Nt Pres Worth	$	1975:		+1,629	+1,558	+1,558	+1,558
10. Increased	Ac	1985:	93	93	90	90	90
Irrigation	Ac	2000:	90	90	85	88	88
Efficiency	Ac	2020:	78	78	79	79	79
11. Full Water	Ac	1985:	171	171	179	179	179
Supply	Ac	2000:	164	164	166	166	166
Irrigated	Ac	2020:	162	162	164	164	164
12. Land Use Change	Ac	1985:	367	367	256	274	274
Rangeland to	Ac	2000:	358	358	345	345	353
Dry Cropland	Ac	2020:	358	358	354	354	354
13. Land Use Change	Ac	1985:	6	6	6	6	6
Rangeland to	Ac	2000:	0	0	0	0	0
Irrigated Croplnd	Ac	2020:	1	1	1	1	1
14. Land Use Change	Ac	1985:	6	6	6	6	6
Dry Cropland to	Ac	2000:	17	17	13	13	13
Irrigated Croplnd	Ac	2020:	20	20	8	18	18
15. Rangeland with	Ac	1985:	38	38	55	55	55
Treatment	Ac	2000:	38	38	55	55	55
	Ac	2020:	3,433	3,433	5,626	4,526	3,586
16. Municipal and	AF	1985:	18	18	18	18	18
Industrial Water	AF	2000:	18	18	18	18	18
	AF	2020:	18	18	18	18	18
17. Agricultural	Ac	1985:	91	91	91	91	91
Flooding	Ac	2000:	91	91	91	91	91
	Ac	2020:	91	91	91	91	91
18. Livestock	AUM	1985:	2,581	2,518	2,453	2,198	1,916
	AUM	2000:	2,560	2,560	2,435	2,179	1,900
	AUM	2020:	3,423	3,423	3,328	2,998	2,623
19. Zero Discharge	Ac	1985:	62	70	74	74	74
Systems	Ac	2000:	62	60	64	64	64
	Ac	2020:	62	64	63	63	63
20. Wldrns-Backcntry Expr	RD	2020:	124	51	51	51	51
21. Fishing	RD	1985:	1,674	2,127	2,127	2,127	2,127
	RD	2000:	2,269	2,127	2,127	2,127	2,127
	RD	2020:	3,486	2,127	2,127	2,127	2,127
22. Big Game	RD	1985:	219	195	195	195	195
Hunting	RD	2000:	315	195	195	195	195
	RD	2020:	517	195	195	195	195
23. Small Game and	RD	1985:	137	84	84	84	84
Bird Hunting	RD	2000:	206	84	84	84	84
	RD	2020:	374	84	84	84	84
24. Boating	RD	1985:	1,115	1,115	1,115	1,115	1,115
Swimming	RD	2000:	1,273	1,273	1,273	1,273	1,273
Water Skiing	RD	2020:	1,514	1,514	1,514	1,514	1,514
25. Total Timber Harvest	MBF	1975:	15,530	21,670	14,600	14,600	14,600
26. Annual	MBF	1985:	47	47	47	47	47
Timber	MBF	2000:	54	54	54	54	54
Harvest	MBF	2020:	59	59	59	59	59
27. Thinning and	Acres	1985:	14.6	6.9	7.2	7.2	7.2
Planting	Acres	2000:	28.0	81.9	17.4	17.4	17.4
Accumulated	Acres	2020:	44.2	118.2	17.4	17.4	17.4

(1). Lines 1-5 are from an input-output (I-O) model and thus reflect secondary and primary economic impacts. Line 5 includes sales for sectors not in lines 1-4. See 'Concepts' Working Paper for more detail.

(2). Private ag revenue and costs were based on linear programming (LP) model and reflect primary effects. Outputs from the LP were used as inputs to the I-O.

(3). Information not available.

E N V I R O N M E N T A L   Q U A L I T Y   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. EQ No Reduction in Erosion	Alt. Fut. EQ 10% Reduc. Erosion	Alt. Fut. EQ 20% Reduc. Erosion	Alt. Fut. EQ 30% Reduc. Erosion
Areas of Consideration							
1. Rivers and Streams	Mi	2020	4.4	4.4	4.4	4.4	4.4
2. Lakes and Reservoirs	Ac	2020	71.6	71.6	71.6	71.6	71.6
3. Protected Aquatic	Mi	1985	316	316	419	500	556
Animal Habitat	Mi	2000	318	318	412	486	549
	Mi	2020	275	275	338	415	500
4. Protected Terrestrial	Ac	1985	845	845	845	845	845
Animal Habitat	Ac	2000	845	845	845	845	845
	Ac	2020	753	753	762	811	808
5. Critical	Ac	1985	552	552	552	552	552
Big Game	Ac	2000	552	552	552	552	552
Habitat	Ac	2020	460	460	469	518	515
6. Critical	AUM	1985	33	33	33	33	33
Big Game	AUM	2000	33	33	33	33	33
Use	AUM	2020	33	33	33	33	33
7. Wilderness Class	Ac	2020	290	164	178	178	178
8. Backcountry Mgt	Ac	2020	(1)	126	112	112	112
Water, Air, Land Quality							
9. Non - Point Source	AcFt	1985	104	104	104	104	104
Pollutn-Irrigtn	AcFt	2000	102	102	109	109	109
Return Flows	AcFt.	2020		96	100	100	100
10. Non - Point Source	Ac	1985	182	182	260	260	260
Polutn - Acres	Ac	2000	181	181	244	244	244
With Flows	Ac	2020	163	163	225	225	225
11. Water Erosion	Ton	1985	5,831	5,831	5,248	4,665	4,082
Annual Total	Ton	2000	5,803	5,803	5,223	4,642	4,062
	Ton	2020	6,665	6,665	5,998	5,332	4,665
12. Water Erosion	Ac	1985	5,051	5,051	3,885	3,231	2,908
Over 0.5 t/a/yr	Ac	2000	5,102	5,102	3,942	3,336	2,958
	Ac	2020	5,886	5,886	4,919	3,913	3,245
13. Land Treatment	Ac	1985	607	607	614	614	614
Minimum	Ac	2000	604	604	605	605	605
Tillage	Ac	2020	606	606	606	606	606
14. Land Treatment	Ac	1985	122	122	140	140	140
Wind	Ac	2000	110	110	112	112	112
Strip	Ac	2020	113	113	115	115	115
15. Land Treatment	Ac	1985	209	209	221	221	221
Contour	Ac	2000	285	285	283	283	283
Farming	Ac	2020	105	105	107	107	107
16. Land Treatment	Ac	1985	144	144	146	146	146
Permanent	Ac	2000	143	143	137	137	137
Cover	Ac	2020	125	125	121	121	121
17. Agric Land Quality	Indx	1985	1.25	1.25	1.18	1.08	0.88
Antelope Habitat	Indx	2020	1.36	1.36	1.27	1.18	0.98
18. Agric Land Quality	Indx	1985	1.32	1.32	1.22	1.10	0.95
Deer Habitat	Indx	2020	1.51	1.51	1.38	1.22	1.05
19. Agric Land Quality	Indx	1985	1.57	1.57	1.39	1.05	0.95
Elk Habitat	Indx	2020	1.95	1.95	1.75	1.36	1.17
20. Agric Land Quality	Indx	1985	1.34	1.34	1.17	1.08	0.99
Grouse Habitat	Indx	2020	1.49	1.49	1.28	1.19	1.05
21. Forestland Quality	Indx	1985	0.92	0.92	0.91	0.91	0.91
Air Quality	Indx	2020	0.89	0.89	0.89	0.89	0.89
22. Forestland Quality	Indx	1985	0.86	0.86	0.92	0.92	0.92
Water Quality	Indx	2020	0.86	0.86	0.92	0.92	0.92
23. Forestland Quality	Indx	1985	0.88	0.88	0.86	0.86	0.86
Wildlife Quality	Indx	2020	0.87	0.87	0.87	0.87	0.87
24. Forestland Quality	Indx	1985	0.98	0.98	0.98	0.98	0.98
Development & Use	Indx	2020	0.96	0.96	0.96	0.96	0.96
Irreversible Commitments							
25. Petroleum Fuel Use	Gal	1985	(1)	21277	21291	21291	20722
Annual Total	Gal	2000	(1)	23494	23428	23428	22815
Rec Ag For	Gal	2020	(1)	25362	24619	25289	24619
26. Prime Cropland Lost							
To Project	Ac	2020	(1)	(1)	(1)	(1)	(1)
To Attrition	Ac	2020	(1)	(1)	(1)	(1)	(1)
27. Prime Forestland Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
28. Crit Wildlf Area Lost	Ac	2020	(1)	(1)	(1)	(1)	(1)
29. Rivers & Streams Lost							
To Project	Mi	2020	(1)	0	0	0	0
To Attrition	Mi	2020	(1)	(1)	(1)	(1)	(1)
30. Historic/Archeol Lost	Site	2020	(1)	0	0	0	0

(1). Information not available.

REGIONAL DEVELOPMENT ACCOUNT

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. EQ No Reduction Erosion	Alt. Fut. EQ 10% Reduction Erosion	Alt. Fut. EQ 20% Reduction Erosion	Alt. Fut. EQ 30% Reduction Erosion
Income Effects							
1. Household Income	$	1985	164,727	164,727	162,473	146,226	149,671
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
2. Gov't Expenditures	$	1985	387,079	381,079	382,832	334,320	354,036
	$	2000	(1)	(1)	(1)	(1)	(1)
	$	2020	(1)	(1)	(1)	(1)	(1)
Number of Jobs							
3. Agricultural Crops	No.	1985	3.3	3.3	3.3	3.2	3.2
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
4. Livestock Industry	No.	1985	2.1	2.1	2.0	1.8	1.6
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
5. Forestry Indusry	No.	1985	0.4	0.4	0.4	0.4	0.4
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
6. All Other Sectors	No.	1985	6.9	6.9	7.0	5.6	6.8
Permanent Jobs	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Seasonal Jobs	No.	1985	(1)	(1)	(1)	(1)	(1)
7. Project Generatd Jobs	No.	1979	(1)	(1)	(1)	(1)	(1)
Type of Jobs							
8. Professional & Techn	No.	1985	0.7	0.7	0.7	0.5	0.6
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
9. Managerial & Admin	No.	1985	4.4	4.4	4.3	4.0	4.0
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
10. Sales and Clerical	No.	1985	1.5	1.5	1.5	1.4	1.5
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
11. Craftmen Foremen Mec	No.	1985	1.2	1.2	1.3	0.7	1.2
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
12. Equipment Operators	No.	1985	0.9	0.9	0.9	0.7	0.9
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
13. Service Workers	No.	1985	1.6	1.6	1.6	1.5	1.6
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
14. Non-Farm Labor	No.	1985	0.7	0.7	0.7	0.6	0.7
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
15. Farm Labor & Foremen	No.	1985	1.7	1.7	1.7	1.6	1.5
Total	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
Population Effect							
16. Agricultural Crop	No.	1985	10.8	10.8	10.7	10.4	10.2
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
17. Livestock Industry	No.	1985	6.9	6.9	6.5	5.9	5.2
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
18. Forestry Industry	No.	1985	1.3	1.3	1.3	1.3	1.3
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)
19. All Other Sectors	No.	1985	22.3	22.3	22.5	18.1	21.9
Population	No.	2000	(1)	(1)	(1)	(1)	(1)
	No.	2020	(1)	(1)	(1)	(1)	(1)

(1) Information not available.

S O C I A L   W E L L - B E I N G   A C C O U N T

Platte River Basin, Wyoming

OUTPUTS AND IMPACTS	Unit 1000	Year	Base-Line Future	Alt. Fut. EQ No Reduction Erosion	Alt. Fut. EQ 10 % Reduction Erosion	Alt. Fut. EQ 20% Reduction Erosion	Alt. Fut. EQ 30% Reduction Erosion
Household Income By Sectors							
1. Agricultural Crops	$	1985:	62,140	54,022	53,553	52,447	51,294
Income	$	2000:	(1)	(1)	(1)	(1)	(1)
	$	2020:	(1)	(1)	(1)	(1)	(1)
2. Livestock Industry	$	1985:	39,375	38,816	37,046	33,504	29,599
Income	$	2000:	(1)	(1)	(1)	(1)	(1)
	$	2020:	(1)	(1)	(1)	(1)	(1)
3. Forestry Industry	$	1985:	3,198	3,199	3,206	3,094	3,203
Income	$	2000:	(1)	(1)	(1)	(1)	(1)
	$	2020:	(1)	(1)	(1)	(1)	(1)
4. Construction Industry	$	1985:	5,333	5,552	5,841	1,414	5,794
Income	$	2000:	(1)	(1)	(1)	(1)	(1)
	$	2020:	(1)	(1)	(1)	(1)	(1)
5. Auto Dealers and	$	1985:	2,055	2,080	2,074	2,000	2,031
Gas Stations	$	2000:	(1)	(1)	(1)	(1)	(1)
Income	$	2020:	(1)	(1)	(1)	(1)	(1)
6. Eating & Drinking &	$	1985:	4,069	4,216	4,115	4,096	4,108
Lodging Places	$	2000:	(1)	(1)	(1)	(1)	(1)
Income	$	2020:	(1)	(1)	(1)	(1)	(1)
7. Other Retail Persons,	$	1985:	6,301	6,529	6,219	5,768	6,063
Repair Services	$	2000:	(1)	(1)	(1)	(1)	(1)
Income	$	2020:	(1)	(1)	(1)	(1)	(1)
8. Governmental	$	1985:	27,653	26,437	26,274	22,879	24,774
Services	$	2000:	(1)	(1)	(1)	(1)	(1)
Income	$	2020:	(1)	(1)	(1)	(1)	(1)
9. All Other Sectors	$	1985:	26,297	23,876	24,145	21,024	22,805
	$	2000:	(1)	(1)	(1)	(1)	(1)
	$	2020:	(1)	(1)	(1)	(1)	(1)
Minority & Women Employmt							
10. Professional, Techn,	No.	1985:	0.537	0.525	0.525	0.483	0.511
Admin, & Managerial	No.	2000:	(1)	(1)	(1)	(1)	(1)
	No.	2020:	(1)	(1)	(1)	(1)	(1)
11. Sales People and	No.	1985:	1.166	1.142	1.140	1.035	1.106
Clerical Help	No.	2000:	(1)	(1)	(1)	(1)	(1)
	No.	2020:	(1)	(1)	(1)	(1)	(1)
12. Craftsmen, Foremen	No.	1985:	0.094	0.093	0.095	0.062	0.092
& Mechanics	No.	2000:	(1)	(1)	(1)	(1)	(1)
	No.	2020:	(1)	(1)	(1)	(1)	(1)
13. Equipment Operators	No.	1985:	0.204	0.203	0.203	0.178	0.197
	No.	2000:	(1)	(1)	(1)	(1)	(1)
	No.	2020:	(1)	(1)	(1)	(1)	(1)
14. Service Workers	No.	1985:	1.403	1.418	1.416	1.391	1.407
	No.	2000:	(1)	(1)	(1)	(1)	(1)
	No.	2020:	(1)	(1)	(1)	(1)	(1)
15. Non-Farm Laborers	No.	1985:	0.087	0.084	0.084	0.070	0.080
	No.	2000:	(1)	(1)	(1)	(1)	(1)
	No.	2020:	(1)	(1)	(1)	(1)	(1)
16. Farm Labor and	No.	1985:	0.315	0.291	0.283	0.267	0.249
Foremen	No.	2000:	(1)	(1)	(1)	(1)	(1)
	No.	2020:	(1)	(1)	(1)	(1)	(1)
Life, Health, and Safety							
17. No Fld Protectn Agric	Ac	1979:	(1)	(1)	(1)	(1)	(1)
18. No Fld Protectn Urban	Ac	1979:	(1)	(1)	(1)	(1)	(1)
Loss of Future Options							
19. Crop Futures Foregone	Indx	1985:	(1)	1.097	1.097	1.097	1.099
20. Water Use F Foregone	Indx	1985:	(1)	0.020	0.020	0.020	0.020
21. Range & Wldlf F Fgone	Indx	1985:	(1)	0.228	0.307	0.645	1.288
22. Fishg & Huntg F Fgone	Indx	1985:	(1)	0.000	0.000	0.000	0.000
23. Recreatn F Foregone	Indx	1985:	(1)	0.960	1.205	1.205	1.205
24. Timber Harvst F Fgone	Indx	1985:	(1)	0.000	0.000	0.000	0.000
25. 1985 Futures Foregone	Indx	1985:	(1)	2.305	2.629	2.967	3.613
26. 2000 Futures Foregone	Indx	2000:	(1)	2.455	2.790	3.144	3.789
27. 2020 Futures Foregone	Indx	2020:	(1)	3.804	4.053	3.838	4.070
Reserve Productn Capacity							
28. Agriculturl Cropland	Ac	2020:	(1)	970	970	970	970
29. Livestock Production	AUM	2020:	(1)	270	544	1,126	1,307
30. Timber Production	MBF	2020:	(1)	53	53	53	53
31. Ground Water Reservoir	AF	2020:	(1)	57	57	57	57

(1). Information not available.

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